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ABSTRACT

A survey conducted to document the status of online searching instruction in United States and Canadian library and information science schools specifically sought information on: reference use of technical processing and traditional search systems, consciousness raising instruction, instructional levels, physical facilities, funding sources, and faculty opinions on online searching, including developmental problems and its future. It was administered by a curriculum committee established in 1979 by the User Group on Online Educators of the American Society for Information Science to improve education and online searching. Of the 116 questionnaires mailed in April 1980 to all ALA accredited library schools and to all institution members of the Association of American Library Schools and a few other schools, 72 were completed and returned. Ten interviews were also conducted in accredited library schools. The results of the survey confirmed that, although courses, instruction content, and teaching methods vary, instruction in online searching is today an integral part of library and information science education. Three educational patterns were identified: the "Single Online Course" approach, the "Large Component" approach, and the "Integrated" approach. Unedited responses to open-ended questions and summaries of the ten case studies are provided as well as 23 tables and 15 references. (RBF)

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Survey of Online Searching Instruction In Schools of Library and Information Science

by

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ABSTRACT

This report summarizes the results of a survey of online searching education and training practices in American schools of library and information science. The major objective of the survey was to obtain information concerning courses that covered the use of online technical processing systems for reference service, course content and other characteristics of consciousness raising instruction as well as advanced instruction, continuing education, physical facilities, and opinions of faculty regarding the future of instruction in online searching. One hundred and sixteen questionnaires were mailed on April 21, 1980 to all library schools accredited by the American Library Association, all institutional members of the Association of American Library Schools, and a few other schools. A total of seventy-two questionnaires were completed and returned. Ten in-person interviews were also conducted. The results of the survey confirmed that, although a variety of philosophies, goals, and practices are followed, instruction in online searching is today an integral part of education in library and information science. Three educational patterns were identified: the "Single Online Course" approach, the "Large Component" approach, and the "Integrated" approach. While most educators favor the integrated approach as an eventual goal, few schools follow this pattern in practice today.

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NOTES ABOUT THE AUTHORS

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I. INTRODUCTION

As online search services and databases have proliferated over the past decade, so has concern for the problems of education and training of online searchers. One result of this concern was the formation of the User Group of Online Educators within the Special Interest Group on Education (SIG/ED) of the American Society for Information Science. In 1979 the User Group established a Curriculum Committee to develop ideas for improving education and training for online searching.

In order to carry out its mission, the Committee needed more information about current educational activities. As an initial step, it was decided to survey online instruction in schools of library and information science. Since we were interested in course content, teaching methods, and levels of instruction in addition to whether or not the schools were teaching online concepts and skills, it was decided to conduct a relatively in-depth survey which utilized both an extensive questionnaire and interviews.

II. OBJECTIVES

The overall objective of the survey was to document the current status of instruction in online searching in U.S. and Canadian schools of library and information science. Specifically, the aim was to obtain information in the following six areas:

(1) Use of systems designed primarily for technical processing, such as OCLC and RLIN, for reference service;

(2) Instruction at the introductory level in online reference systems, including course or unit content and the availability and nature of hands-on experience;

(3) Advanced level instruction including prerequisites, course content, amount and nature of practical experience, and the type of course in which the instruction is offered;

(4) Continuing education offerings;

(5) Physical facilities available for online searching and levels and sources of funding;

(6) Faculty opinions in regard to issues associated with online instruction, particularly the place of online instruction in the curriculum and the problems associated with its development.

III. BACKGROUND

The only previous broad survey of online education in United States schools of library and information science was performed by HARTER (1977, 1979). At that time at least two-thirds of the accredited schools were providing some form of online education. There was much diversity among the schools concerning the nature of the instruction and its place in the curriculum. Both demonstration and hands-on experience were used as well as in-house and commercial systems. In some schools, online searching was integrated into existing reference or information science courses; in others, such as the University of South Florida, it was taught as a separate course. The curricula were still actively developing in this area. HARTER also describes the South Florida course which he considered practicable and successful. This was an advanced level course with one reference and one information science course as prerequisites. Online practice and experience were given on the Lockheed DIALOG system with some exposure to another system.

With a minor exception, the remainder of the U.S. literature is limited to descriptions of curricula at single schools. At the University of Kentucky, BELLARDO, KENNEDY and TREMOULET (1978) taught an online course in which one-third of the course was devoted to each of three systems: OCLC, MEDLINE and Lockheed's DIALOG. (This course has since evolved into a single-system course concentrating on DIALOG.)

SLAVENS and RUBY (1978) discuss the content of an online course at the University of Michigan. (Michigan went thereafter to a situation in which online searching was taught in the basic reference and subject bibliography courses and then later began to offer separate online "mini-courses.")

Other courses devoted entirely to online instruction have been described by BOURNE (1980), KNAPP and GAVRYCK (1978), BORKO (1978), and BOYCE (1979). The curriculum at the University of Missouri (BOYCE) is notable for its sequenced approach within a one-year curriculum. All students take required courses in computers, cataloging (including systems such as OCLC), and basic reference, which place some emphasis on online tools. Students interested in online searching then take a course in abstracting and indexing in which they study vocabularies and the reference interview, and create and search their own database. They are then ready for either a course in medical bibliography, which contains a large online component, or a course called "Automated Reference Services," which concentrates on the Lockheed, SDC and BRS systems. BOYCE considers the students who have completed this sequence ready for entry level online searching positions.

In 1976, BERK and DAVIDSON (1978) surveyed 13 library schools that had been assigned educational codes by the National Library of Medicine. The instructors came from a variety of backgrounds. On the average the students received two hours of hands-on practice, far less than persons attending National Library of Medicine training workshops. SEWELL (1974), REES et al. (1976) have related their experiences in implementing a MEDLINE module within a health sciences course.

Turning to the other side of the Atlantic, VICKERY (1977) reports on a project funded by the British Library Research and Development Department. Ten schools experimented with online bibliographic instruction through an introduction to the techniques of existing courses. TEDD and KEEN (1978) and KEENAN (1976) have described two of these introductory modules. There is an emphasis in the British literature on teaching methods, particularly audiovisual aids such as videotapes of search interactions. Given the much higher cost of searching in Britain as compared to the U.S., the interest in means of reducing demonstration costs and finding alternatives to hands-on practice is understandable.

In 1978, an institute for library educators on new techniques for teaching online searching was held at the University of Washington School of Librarianship. One outcome of the institute was a position paper (MIGNON, 1978), which represented the collective judgement of the attendees, and contained a set of proposed standards for online education in graduate degree programs in library and information science. Among the additional contributions of this paper was the recognition that there are at least two types of online instruction that are appropriate to the library school setting. The first is consciousness raising, which gives all students an awareness of the capabilities and potentials of online searching. Interested students may then elect operator training, for the objective of qualifying to be beginning professional searchers. The design of this study owes much to the idea of this taxonomy and the definitions developed at the institute.

IV. METHODOLOGY

Questionnaires were mailed on April 21, 1980 to all library schools accredited by the American Library Association's Committee on Accreditation, to all institutional members of the Association of American Library Schools (usually referred to as nonaccredited schools), and to a few other schools identified as having library science, school media, or information science programs. The cover letters were addressed to the heads of the schools, who were asked to refer the questionnaires to the faculty members most involved in online education. Follow-up questionnaires were sent to non-respondents on June 13. Appendix A reproduces the questionnaire and original cover letter.

Table 1 shows that the overall rate of response was 62 percent, with the highest response rate coming from the accredited schools.

Following the objectives, the questionnaire covered six major topics: (1) use of systems such as OCLC and RLIN for reference service; (2) instruction at the consciousness raising level; (3) advanced level instruction; (4) continuing education; (5) facilities and funding; and (6) faculty opinions.

TABLE 1. Survey Response

	No. Mailed	No. Responding	Percent
Accredited Schools	67	51	76
Non-accredited Schools	36	18	50
Others	13	3	23
TOTAL	116	72	62

The survey was followed by ten in-person interviews supplemented with telephone conversations. In selecting schools for the interviews we aimed for diversity; we looked for unusual approaches but we also talked to representatives of schools that had followed the more common patterns. The interviews were semi-structured. A basic interview schedule was developed, which asked for elaboration of answers from the questionnaire and also was

meant to elicit opinions more complex than could easily be obtained by questionnaire. The interviewers were not bound by the schedule and in all cases the interviewers adapted as they went along to follow up on interesting leads provided by the educators.

V. RESULTS

A. Reference Use of Technical Processing Systems

The first question asked was: To what extent does your school teach the use of systems, such as OCLC and RLIN, for reference service (even though they were designed primarily for technical processing)? The responses indicated that in 54 percent of the schools this system capability was a topic in one or more courses and that it was at least mentioned in a course in another 32 percent of the schools. However, the descriptions of reference use of these systems that were requested as the final part of Question 1 gave the impression that a few of the respondents may have misinterpreted the question and were providing information about the teaching of online technical processing systems in general. (See Appendix B, Question 1.c.) Thus, these percentages may be slightly inflated.

Table 2 summarizes the responses to Question 1 by school category. Given the small numbers, the distribution of responses among the three types of schools is relatively even. This was a pattern throughout the survey. That is, there were no startling or systematic differences among the three types of schools in the online education provided. For this reason, we do not break down responses by school category in the remainder of this report.

TABLE 2. Teaching the Use of Primarily Technical Processing Systems for Reference Service

Response	Accredited Schools N = 51	Non-accredited Schools N = 18	Others N = 3	Total N = 72
Is a Topic in One or More Courses	27 (53%)	10 (56%)	2 (67%)	39 (54%)
Mentioned Only	19 (37%)	4 (22%)	0 (0%)	23 (32%)
Not at All	5 (10%)	4 (22%)	1 (33%)	10 (14%)

The descriptions given of the reference use of technical processing systems often mentioned the courses in which it was taught. From this information it

was possible to categorize the courses by type. Table 3 shows the courses which were mentioned three or more times. (See Appendix B, Question 1.c. for the complete course list.) Not surprisingly, reference and cataloging courses were mentioned most frequently.

TABLE 3. Generic Titles of Courses in Which Reference Use of Primarily Technical Processing Systems is a Topic

Course Categories*	Number of Schools** N = 39	Percent
Reference	13	33
Cataloging	9	23
Advanced Cataloging	7	18
Information Systems	7	18
Bibliography/Resources (including subject-oriented)	7	18
Online Searching	6	15
Information Science	5	13
Library Automation	4	10
Advanced Reference	3	8

* Mentioned three or more times.
** Several schools reported more than one course.

B. Online Searching in Information Retrieval Systems

For the remainder of the survey, online searching was defined to include traditional online bibliographic search systems such as Lockheed, SDS, and BRS, as well as the use of numeric databases, The Source, and teletext systems. Systems designed primarily for technical processing were excluded from consideration.

Sixty-eight of the 72 responding schools (94 percent), provide some type of instruction in online searching as part of their regular curriculum. The four schools not teaching online concepts were from the nonaccredited category. Two of the four stated that they planned to introduce instruction in online searching in the near future.

1. Consciousness Raising Instruction

Consciousness raising was defined in the questionnaire to be introductory instruction which gives students awareness of the procedures and uses of online searching. By this definition, all but one, or 98 percent, of the schools that provide some form of online instruction have courses in which only consciousness raising is provided.

Thirty-one different types of courses were named as having an online consciousness raising component. See Appendix B, Question 3.b. for the complete list and Table 4 for titles of courses mentioned three or more times. The generic course titles "Introductory Information Science," "Basic Reference," and "Advanced Reference" represent the most frequently mentioned course titles, and several schools have added an online component to the subject literature/bibliography/resources courses. From discussions with faculty members it seems probable that the distribution of consciousness raising instruction among such a variety of courses does not reflect purposeful planning, but it is a happenstance that depends upon the interests and abilities of course instructors. Several of the faculty interviewed felt that there should be an online component in the subject literature/bibliography/resources courses in their schools, but noted that this would not happen with the present instructors of these courses.

TABLE 4. Generic Titles of Courses in Which the Consciousness Raising Level of Online Instruction is Provided

Course Category*	Number of Schools** N = 67	Percent
Introductory Information Science	38	57
Basic Reference	23	34
Advanced Reference	21	31
Science & Technology Literature/Bibliography/Resources	8	12
Computerized Information Retrievel/Systems	8	12
Core Courses	4	6
Social Science Literature/Bibliography/Resources	4	6
Government Publications	3	4
Humanities Literature/Bibliography/Resources	3	4
Research Methods	3	4

*Mentioned three or more times
**Several schools reported more than one course.

In order to ascertain the content of the consciousness raising component of the courses, the questionnaire listed ten topics that might be introduced. All were part of the course content in at least forty percent of the schools. (See Table 5.) Twelve additional topics were listed by ten schools. (See Appendix B, Question 3.c) The remark of one online educator is worth highlighting here because it illustrates a bit of evangelism that cropped up many times in both the questionnaires and interviews. He listed as an "other topic":

> "That online systems now provide a golden opportunity for librarians to move from their obsession with peripheral info. sources to primary and secondary sources as their main point of focus."

TABLE 5. Topics Taught in Consciousness Raising Instruction

Topics	Number of Schools N = 67	Percent
Databases Available	63	94
Examples of Simple Online Searches	61	91
Potential of Online Searching in Reference Service	59	88
Conceptual Aspects of Search Strategy and Search Formulation	52	78
User-system Interaction in an Online Setting	49	73
Nature of Machine-readable Records	45	67
Structure of the Online Industry	42	63
Reference Interview in an Online Setting	39	58
Functions of the Online Reference Librarian	37	55
Non-bibliographic Databases	29	43
Other	10	15

In 47 of the schools, "hands-on" practice was a part of the consciousness raising experience. The range of practice times per student was from six minutes to 10 hours with a median of .65 hours, a mean of 1.4 hours, and a mode of .5 hours. Comments pertaining to this question (Appendix B, Question 3.e.) reveal flexibility in some schools in regard to the amount of hands-on time received by the students. In one, it was available but not required and the students could use "as much as desired." Another school allowed the time needed to complete reference assignments, and yet another charged students $20 per hour and required them to use a $25 minimum (the lab fee). Table 6 shows the types of systems used for online practice in the consciousness raising level of instruction.

TABLE 6. Types of Systems Used for Online Practice in the Consciousness Raising Level of Instruction

System	Number of Schools* N = 47	Percent
Publicly Accessible System (e.g. DIALOG)	44	94
In-house System	16	34
Computer-assisted Instruction	7	15
Online Emulator of a Publicly Accessible System	0	0

* Several schools reported using more than one type of system.

2. Online Searching Courses Beyond the Consciousness Raising Level

Fifty-nine of the schools (87 percent) that provide some form of online searching instruction offer one or more courses including topics in online searching beyond the consciousness raising level. These include all but four of the accredited schools responding. Thirty-three of these schools have more than one such course and 11 have five or more. See the distribution in Table 7.

TABLE 7. Frequency Distribution of Number of Courses Including Topics in Online Searching Beyond the Consciousness Raising Level

Number of Courses	Number of Schools N = 68	Percent
0	9	13
1	26	38
2	7	10
3	5	7
4	10	15
5	8	12
6	1	1
7	1	1
8	1	1

Appendix B, Question 4 contains the names of the specific courses with the percentages of time devoted to online searching instruction, arranged by school. Where possible, similar courses have been grouped into categories for display in Table 8. The grouping was accomplished by making certain assumptions, e.g., that "Computer-based Retrieval Services" and "Online Data Base Searching" can both be placed in the generic category "Online Searching"; and that "Introduction to Library Automation" and "Automation of Library Systems" are similar enough to be grouped under "Library Automation". Forty-seven percent of the schools offering courses that include topics in online searching going beyond the consciousness raising level offer a course devoted almost entirely to online searching, and three schools have more than one course in this category. The next most popular locations (25%) for online searching instruction were in courses variously titled "Information Storage and Retrieval," "Analysis of Information Systems," "Computer-Based Retrieval and Information Systems," and in courses in the literature of science and technology. As with consciousness raising, substantive instruction in online systems also takes place in advanced subject resources/bibliography courses, and in a variety of other courses.

TABLE 8. Generic Titles of Courses Beyond the Consciousness Raising Level of Instruction

Course Category*	Number of Schools** N = 59	Percent
Online Searching***	28	47
Information Storage and Retrieval Systems	15	25
Science Lit/Bibliography/Resources	15	25
Social Sciences Lit/Bibliography/Resources	9	15
Humanities Lit/Bibliography/Resources	7	12
Reference	7	12
Introduction to Information Science	7	12
Advanced Reference	6	10
Library Automation	6	10
Online Searching (unknown amount or less than 61%)	5	8
Advanced Cataloging and Classification	3	5
Government Information Sources	3	5
Medical Bibliography	3	5
Interactive Systems	3	5

*Mentioned three or more times. **Many schools reported more than one course.
***Online searching topics comprise more than 84 percent of the course.

Almost certainly more specialized courses such as "Government Information Sources," "Medical Bibliography" and "Legal Bibliography" have an online component that is not indicated by the responses to the questionnaire. These courses are electives and in many schools are taught by adjunct faculty. So, it seems that the respondents, who for the most part were full-time faculty directly involved in the online searching and information science specialization of the curriculum, were either unaware of the content of these courses, or did not view the online component as "substantial."

As with consciousness raising, whether or not an advanced component in online searching is taught in a particular course not devoted entirely to the subject probably depends more on the instructor than on any other factor. The list of

the courses in which it appears (Appendix B, Question 4) reveals remarkable variety. One can also see that the percentage of time devoted to advanced topics in online searching in these courses ranges from three percent to one hundred percent.

Only one school presently has a course devoted entirely to non-bibliographic databases (University of Washington), but Syracuse University has been conducting a two-week workshop in numeric databases that will be expanded to a full course soon.

3. Courses in Which Fifty Percent or More Time is Devoted to Online Searching

Forty-seven schools have at least one course in which 50 percent or more class time is devoted to online searching topics, and the curricula of nine schools now contain two or three such courses. Five schools completed questionnaires for more than one course, so that the following descriptions are for 53 courses.

4. Prerequisites

Reference courses and either Information Storage and Retrieval, Information Systems or Information Science were frequently named as prerequisites to the online searching courses, and eight schools require one or more basic introductory or core courses (See Table 9). Others required advanced reference or literature courses that may themselves have had prerequisites. See Appendix B, Question 5.b, for titles of other prerequisites listed by responding schools.

TABLE 9. Prerequisites to Online Searching Courses

Prerequisite	Number of Courses* N = 53	Percent
Reference Courses	26	49
Information Storage and Retrieval, Information Systems or Information Science	18	34
Fundamentals, Foundations, Introductory Core	8	15
Other Courses	14	26

*Several courses have more than one prerequisite

The number of prerequisites varied from none to four (Table 10). The Reference and Information Storage/Retrieval/Systems combination occurred eight times. Thus, most schools required one or the other of these courses but not both. The school with four prerequisites listed three apparently basic or core courses and an Information Retrieval/Systems/Science course. One respondent, from a school with three online courses, stated that there were now no prerequisites, but he was considering requiring a typing speed of 20 words per minute.

TABLE 10. Frequency Distribution of Prerequisites

Number of Prerequisites	Number of Courses N = 53	Percent
0	10	19
1	27	51
2	15	28
4	1	2

Most schools of library and information science offer one-year programs leading to a masters degree. Many, but not all, have a "core," a comprehensive basic course or a group of basic courses which the students must take first. There is, after that, little time for full-time students to fit in series of courses such as an additional prerequisite and an online course. Such practical considerations can have a considerable impact on the specification of prerequisites. In some schools, Reference and/or Information Retrieval/Systems/Science are de facto prerequisites because they are part of the core.

5. Content

Table 11 shows the topics covered in courses in which 50 percent or more time is devoted to online searching. Ninety-two percent of the courses covered the nature and types of machine-readable databases. Consistent with the idea that these courses are a start towards training students to actually use online systems, 87 percent of the respondents stated that searching was a topic in their course. This figure is low. All of the persons who responded negatively when asked if they taught "searching" indicated that they taught either the "Conceptual Aspects of Search Strategy and Search Formulation" or "System Mechanics, System Commands," or both. So, at least some instruction on how to conduct an actual search is a topic in virtually all the courses.

Information about database producers and database vendors is given in 89 and 87 percent of the courses respectively. Eighty-one percent of the courses cover the user/librarian and user/system interaction, including the reference interview. Finally, although they are all a part of more than half of the courses, management topics were found least frequently.

TABLE 11. Topics in Online Searching Courses

Topics	Number of Courses N = 53	Percent
Nature and Types of Machine-Readable Databases	49	92
File and Record Structure of Databases	49	92
Databases Available	48	91
Characteristics of Nonbibliographic Databases	30	57
Searching	46	87
Conceptual Aspects of Search Strategy and Search Formulation	50	94
Search Mechanics, System Commands	49	92
Use of Equipment	45	85
Structure of the Online Industry	44	83
Database Producers	47	89
Database Vendors	46	87
User/librarian and User/system Interaction	43	81
Reference Interview in a Computer-based Setting	43	81
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Vendor Evaluation and Selection	34	64
Service Organization, Procedures and Staffing	30	57

There is some similarity in the courses that omit entirely one or more of the three subject areas: (1) online industry, (2) user/librarian or user/system interaction, or (3) management. All but two are either information systems or information science courses that are not entirely devoted to online instruction or are subject bibliography courses. The titles of these courses are listed in Table 12.

According to the responses, online courses contain many topics not asked about specifically in the questionnaire. These are listed in Appendix B, Question 5.c. The only topics mentioned more than once are thesauri, programming, and telecommunications.

TABLE 12. Courses Lacking One or More of Three Components: Online Industry, User/Librarian or User/System Interaction, Management

Title	% Time Devoted to Online Searching Topics
Online Interactive Systems	100
Online Data Base Searching	100
Health Sciences Communications Networks	50
Introduction to Information Science and Data Processing	50
Introduction to Information Retrieval	50
Science Literature	50
Introduction to Information Processing	50

6. Hands-On Practice

Students receive hands-on practice time in 52 of the 53 courses. Surprisingly, the lone course not providing a live practice component was a course devoted entirely to online searching. In 38 percent of the courses, the students work alone at all times. (See Table 13.) In other courses, they work in groups of varying sizes, and in nearly half of the courses a combination of methods is used. In some schools, it was up to the students to choose to work alone or to form practice groups. Seven respondents mentioned that the instructor or a laboratory assistant was always present when students worked at the terminals. Appendix B, Question 5.e. contains descriptions of other ways students practice and some instructors' comments.

TABLE 13. Circumstances Under Which Students Work at the Terminals

Circumstances	Number of Courses N = 52	Percent
Alone	20	38
Groups of Two	4	8
Groups of Three	4	8
Groups of Four	2	4
Combination of Methods	22	42

The amount of online practice time received by each student ranged from 0.4 hours to 11-12 hours with no limits imposed. The latter school utilized the BRS system. (See Appendix B, Question 5.f. for additional comments on search time.) In one school, students practiced 28 hours using emulators of commercially available systems. Overall, the median number of practice hours is 4, the mean is 4.6 hours, and the mode is 3 hours.

It has been recommended (MIGNON, 1978, p.7) that the amount of online search practice time allotted to train a novice searcher--a person qualified to perform searches for patrons--be at least five hours. If this is true (and we have no real evidence that it is), 66 percent of the schools are not providing enough time to train their students to this level. Whether or not this is the goal of the instruction in these online courses is not known; however, we can be reasonably certain that students who take online courses are hoping to learn to search in order to improve their place in the job market.

Obviously, cost is an important consideration in the amount of online practice time allowed for each student. Even at the low educational rate of $15 per hour, it can be expensive to train large classes on commercial systems.

7. Systems Used

While the systems on which students practice most frequently are the "big three" - Lockheed, SDC, and BRS - a total of 14 other systems are being used. (See Table 14.) Lockheed is the most popular followed by SDC and BRS in that order. Eight schools use the National Library of Medicine system, and a few arrange for their students to practice on the New York Times, The Source, CAN/OLE, QL Systems, and Dow Jones.

Courses that use an in-house system or emulator presumably enjoy considerable savings in connect charges and have little need to limit the amount of student practice time for financial reasons. One might assume that the amount of practice time in such courses is more likely to be a reflection of what the instructor feels is best for the students. In order to examine differences between these courses and courses using publicly accessible systems, the eleven courses utilizing in-house systems or emulators are profiled in Table 15. No consistent pattern emerges. All but three of these courses use five or more hours of practice time, but only one, "Interactive Systems," provides an unusually large amount. The courses are a mix of courses devoted entirely to online searching and Information/ Retrieval/System/Science courses in which the topic of online searching is only one component. In two of the latter courses, the students help build the database as well as search it.

TABLE 14. Systems Used in Online Searching Courses

System	Number of Courses* N = 52	Percent
Lockheed	37	71
SDC	22	42
BRS	15	29
National Library of Medicine	8	15
In-house	8	15
Emulator	3	6
New York Times	3	6
The Source	3	6
CAN/OLE	3	6
QL Systems	2	4
Dow Jones	2	4
Dartmouth	1	2
INDIRS	1	2
RLIN	1	2
OCLC	1	2
NASA/RECON	1	2
LEXIS	1	2

*Many courses use more than one system.

TABLE 15. Courses Utilizing In-House Systems or Emulators

Course Title	Type of System	% Time Devoted to Online	% Time on This System	Online Practice Time (Hours)
Advanced Information Science	In-house	-	5	6.5
Online Library Systems and Services	In-house	90	4	7+
Online Reference Service	In-house	100	10	5
Introduction to Information Storage and Retrieval	In-house	50	100	1
Information Systems	In-house	75	90	3.5
Introduction to Information Processing	In-house	50	100	5
Abstracting and Indexing	In-house	50	100	3
Online Searching of Databases	In-house	100	5	-
Information Retrieval	Emulator	-	95	5.55
Computer-Based Reference	Emulator	100	10	5+
Interactive Systems	Emulator	100	100	28

There are two opposing philosophies in regard to the number of systems that should be taught in a course. Although their students may be given exposure to additional systems, some educators feel that the best way for their students to learn the principles of online searching is to deal solely with the mechanics of one system. Other educators teach more than one system because they believe that this is more realistic and also more equitable to the vendors. Table 16 shows the distribution of courses according to numbers of systems taught. Courses in which one system is used 80 percent or more of the time predominate, making up 57 percent of the total.

TABLE 16. Distribution of Courses by Numbers of Systems Taught

Number of Systems	Number of Courses N = 52	Percent
100% One System	20	38
80-99% One System	10	19
Two Systems but < 80% One System	8	15
Three Systems but < 80% One System	6	12
More than Three Sys. but < 80% One System	6	12
No responses	2	4

8. Databases Used

ERIC was by far the most popular database. Not only was ERIC used in twice as many courses as any other database, but it was also proportionally the most heavily used database within the courses. PSYCINFO and SOCIAL SCISEARCH were frequently mentioned reflecting the predominance of social science databases. Table 17 provides a complete listing of all databases mentioned. Instructors often select social science databases because the topics covered generally can be understood by persons without any special subject background. The science databases highest on the list are NTIS, BIOSIS, MEDLINE, AGRICOLA and Search CA.

TABLE 17. Databases Used in Online Searching Courses

Databases*	Number of Courses** N = 52	Percent
ERIC	33	63
PSYCINFO	14	27
Social Scisearch	13	25
NTIS	10	19
BIOSIS	9	17
MEDLINE	6	12
Magazine Index	6	12
AGRICOLA	5	10
CA Search	5	10
National Newspaper Index	4	8
INSPEC	4	8
COMPENDEX	3	6
CDI	3	6
ABI/INFORM	3	6
Scisearch	2	4
LIBCON	2	4
Predicasts	2	4
G.P.O. Monthly Catalog	2	4
Energyline	2	4
Other databases (mentioned once only)	24	-

*Databases mentioned two or more times.
**Most courses used more than one database.

25

Several instructors indicated that choice of databases depended upon the interests of the students. At UCLA and the University of South Florida, students work with actual clients who have prepared search requests. The databases used then depend upon the subject of the request.

As with vendor systems, an important issue in selecting which databases to use is whether to concentrate on one database or to spread the practice searching around among several databases. Table 18 shows that the courses more often covered multiple databases than multiple systems. More than five databases were introduced in fully half of the courses. In 27 courses, one database was used 50 percent or more of the time. In 22 of these courses, this database was ERIC.

TABLE 18. Distribution of Courses by Number of Databases Taught

Number of Databases	Number of Courses N = 52	Percent
1	5	10
2	3	6
3	1	2
4	3	6
5	9	17
More than 5 or "Various," "According to interest" etc.	26	50
No response	5	10

9. Textbooks and Manuals

Table 19 contains lists of both textbooks and manuals used in more than one course. Lockheed DIALOG publications top both lists which is a reflection of the fact that DIALOG is the most used system in the schools. Instructors indicated that they depend on the vendors' manuals and many mentioned a variety of manuals published by the database producers. One respondent noted that there is no up-to-date text in the field.

10. Instructors

Most instructors of online courses are members of the full-time faculty. (See Table 20.) Adjunct faculty today teach only 11 percent of the courses. This is a considerable change from practices a few years ago, when most faculty for

online courses were adjuncts. A few schools utilize both full-time and adjunct faculty in this role.

C. Continuing Education

Slightly over half (53%) of the schools sponsor short courses or workshops on online searching. The type of credit provided for these courses is shown in Table 21. University credit is offered by only 18 percent of the schools while 29 percent provide continuing education credit.

D. Facilities, Equipment and Funding

A separate information systems laboratory or room in which online terminals can be used is available in 79 percent of the schools that offer online instruction. In 46 percent of the schools, this room is staffed with a person trained in online searching. The range of staffed hours per week is large, from 5 to 90 hours, with a mean of 26 hours, a median of 20 hours, and a mode of 20 hours.

TABLE 19. Textbooks and Manuals Used in Online Searching Courses

Publications*	Number of Courses** N = 53	Percent
Textbooks		
DIALOG Lab Workbook: Training Exercises for the DIALOG Information Retrieval Service. 2nd ed. Palo Alto, CA: DIALOG Information Retrieval Service, November, 1979.	13	25
Lancaster, F. W. Information Retrieval Systems, 2nd ed. New York: Wiley, 1979.	7	13
Knapp, Sara D. BRS Training Workbook: An Introduction to Searching on the BRS System with Practice Exercises from the ERIC Database. Scotia, New York: Bibliographic Retrieval Services, Inc., 1979.	2	4
Lancaster, F. W. and E. G. Fayen. Information Retrieval On-Line. Los Angeles, CA: Melville Publishing [illegible], 1973.	2	4
Markey, Karen and Pauline Atherton. ONTAP: Online Training and Practice Manual for ERIC Data Base Searchers. Syracuse, NY: ERIC Clearinghouse on Information Resources, Syracuse University, June 1978. (Based on the earlier unpublished work of Charles P. Bourne, Barbara Anderson, and Jo Robinson.)	2	4
System Manuals		
Guide to DIALOG Searching	15	28
ORBIT Manual	8	15
BRS System Reference Manual and Database Search Guides	4	8
Guide to DIALOG--Databases	3	6
Online Service Reference Manual (NLM)	2	4

*Used in two or more courses. **Some courses use more than one publication.

TABLE 20. Status of Instructors

Status	Number of Courses N = 53	Percent
Full-time Faculty	42	79
Adjunct Faculty	6	11
Both	3	6
No response	2	4

TABLE 21. Credit Given for Online Short Courses or Workshops

Type of Credit	Number of Schools* N = 68	Percent
University Credit	12	18
Continuing Education Credit	20	29
No Credit	11	16

*There were 37 "No Responses" to this question and several schools offer more than one type of credit.

The range of terminals dedicated to student use is also great, from none to 17. In the schools having terminals, the mean number of terminals is 4, the median number of terminals is 3, and the mode number of terminals is 2. A distinction could have been made between terminals for use only in the schools of library and information science and terminals available to the entire university community. Another possible distinction is between terminals to access remote computers and terminals hard-wired to in-house or university systems. One respondent said that while two terminals are available in the information science school, the students have access to 40 other terminal locations on campus.

Using video monitors to show both live and taped demonstrations of online search interactions has become a popular instructional technique. They are now utilized in 54 percent of the schools that provide some type of online instruction.

Table 22 gives a picture of the methods schools have used to fund online searching instruction. By far, the major support comes from the universities which are the parent institutions. Thirty-three of the 62 schools that provide for student practice on online systems derived one hundred percent of the support from the universities (not shown).

Of the alternate funding methods, student assessment was most often used to pay for connect time and communications costs. In three schools, all of these costs were paid by the students (not shown). In another, both 80 percent of the connect time plus communications costs and 80 percent of the terminal maintenance costs came from the students.

Very little financing for online instruction is obtained from sale of reference services. Only two schools reported utilizing this method; one school to pay for 50 percent of connect time and communications costs, and the other school to pay partially for the initial investment, connect time and communications, and other costs.

TABLE 22. Sources of Funding for Online Searching Instruction

Source	Funded Activity N = 62							
	Initial Investment		Connect Time and Communications		Terminal Maintenance		Other Costs	
	No.*	%**	No.*	%**	No.*	%**	No.*	%**
University Support	56	94	58	87	60	98	46	99
Student Assessment	0	0	12	70	1	80	2	100
Sale of Reference Service	1	25	2	32	0	0	1	100
Grant monies	11	59	5	43	2	75	1	25

*No. of schools receiving support from this source.
**In schools receiving funds from this source, average percent funded from the source.

Grant monies provided for all or part of the initial investment in 11 schools and for all or part of the connect time and communications costs in five schools. In only one school did grant money pay all the costs.

Other sources of funding reported were gifts and absorption by the university library. One school had put together a package whereby the computer facility picks up a portion, the library school a portion, and the student a portion. Another had just voted through a lab fee.

Since utilization of online services by students involves substantial costs beyond what is required for most courses, funding has been a problem area in many schools. A few schools have charged students, but most schools either are reluctant to engage in what many feel is a discriminatory practice or are not allowed to assess student fees by university rule. Some schools have obtained grant money to pay for, or help pay for, online instruction. But it is clear from the questionnaire responses that most of the support is coming from the parent institution. Whether adequate funding is being received is a question that is addressed later in this report.

E. Faculty Opinions

1. Curriculum Questions

In a recent article, Charles Bourne and Jo Robinson state:

> In the long run, it is the library school that will be responsible for producing new librarians versed in computer-based search skills. First, we expect that courses in computer-based reference will enter the curricula of more library schools. Later, computer search techniques could be integrated into the regular reference courses. (BOURNE & ROBINSON, 1980.)

The questionnaire asked for agreement or disagreement with this scenario and comments. Fifty-two (72 percent) of the respondents agreed, 13 did not agree, and there were seven "no responses." The scenario described by BOURNE and ROBINSON contains two questions: (1) Should library schools be responsible for online instruction; and (2) If yes, where in the curriculum should it be located? From the comments, it was apparent that most of the negative responses addresed the second question. Statements that were exceptions from two respondents who did not feel that either library schools in general or their schools should take on online instruction follow:

Statement 1:

> Cost factors make this approach prohibitive. Vendors will have to provide practical training. Schools can only provide background information.

Statement 2:

> Our philosophy is that librarians are managers. Our newly-adopted curriculum strongly emphasizes management training. That must come first in a one-year curriculum. Searching skills, as with other technical skills, must take second priority.

A number of persons giving other "No" answers and commenting held the following beliefs: (1) specialized courses are needed to give the students in-depth training; (2) searching should be integrated into other courses such as information storage and retrieval; (3) the specialized course step should be skipped; (4) both the specialized and integrated courses are needed; (5) cost factors make the approach prohibitive. Two schools reported a reverse progression; they had tried integration and had found that a separate course was necessary.

Some of the "Yes" responses to this question mentioned the need for a separate specialized course as well. Several persons giving "Yes" answers indicated that the pattern was being followed in their school or they had already achieved integration, some by skipping the specialized course step. A notable characteristic of some of the responses favoring integration was fervor--expressed in remarks such as "We feel strongly," "the sooner----the better."

See Appendix B, Question 12 for all of the comments on the BOURNE and ROBINSON scenario.

2. Barriers to Development of Instruction in Online Searching

Cost is highest on the list of perceived barriers to the development of online instruction in schools of library and information science. This implies that most instructors are dissatisfied with the level of funding they are receiving. (See Table 23.)

TABLE 23. Barriers to the Development of Online Instruction in Schools of Library and Information Science

Barriers	Number	N = 72	Percent
Cost	53		74
Obtaining Adequately trained Faculty	27		38
Faculty Opinion that it Does Not Belong	12		17
Other	2		3
No Significant Barriers	13		18

Obtaining adequately trained faculty, mentioned in 38 percent of the responses, is also a significant problem. Two comments on this question especially addressed the difficulty of obtaining adequately trained faculty in the subject-oriented courses or of training faculty already teaching these courses.

Faculty opinion that online instruction does not belong is an additional significant barrier according to 17 percent of the respondents. Other barriers listed were developing adequate teaching modules, faculty fear and ignorance, and finding time in a crowded curriculum. Lack of student interest was also given as a problem in two schools; although many persons interviewed in conjunction with the survey indicated that student interest in online instruction is extremely high. Only 18 percent of persons answering the questionnaire felt that there were no significant barriers. Appendix B, Question 13 lists all responses to this question.

3. Additional Comments

In the final survey question, respondents were asked to provide "Other Comments." Several faculty here discussed the fact that an online searching course had recently been introduced or was about to be introduced into the curriculum. Other statements in this section confirmed the impression that instruction in online searching is very much in a state of flux at many institutions. See Question 14 in Appendix B for the list of "Other Comments."

F. Case Studies

Interviews conducted with questionnaire respondents resulted in case studies of online education in ten accredited library schools. The studies provide a total picture of the role of online instruction in the individual schools, and so supplement the findings of the questionnaire. In addition, the interviews provided us with the opportunity to intensively probe the opinions of the faculty members regarding problems associated with online instruction and its place in the curriculum. Schools were selected in part for their diversity of approaches, and in this they did not disappoint us. The only common theme found is that the status of online instruction in the schools is constantly changing. In fact, in some schools it is changing so fast that the questionnaire results were outdated by the time the interviews took place. Summaries of the case studies are presented in Appendix C.

VI. DISCUSSION

This survey confirmed the results of HARTER (1977) that online searching is an accomplished fact in American schools of library and information science. Even if it is not taught in any of the non-responding schools (and we know this not to be the case), it is part of the regular curriculum in 76 percent of schools accredited by the American library association and in 39 percent of non-accredited schools. The courses in which it is taught, the content of the instruction, and teaching methods vary widely. Clearly, the place of online searching in the overall curriculum is still evolving.

In 54 percent of the schools responding, use of systems like OCLC and RLIN for reference purposes is a topic in one or more courses and is mentioned in courses in another 32 percent of the schools. The subject is most often part of reference and cataloging courses, but it also shows up in other types of courses such as information systems and subject-oriented bibliography. One can speculate that lack of faculty knowledge and awareness is a factor in this area. Many, probably most, faculty teaching reference have not been trained in the online technical processing systems and so know very little about their reference capabilities and possibilities. Conversely, the faculty teaching cataloging may not be aware of the reference needs that these online systems can fulfill. We have observed that the same pattern exists among staff members in some large libraries. It would seem that there is a great need here for continuing education of librarians as well as library school faculty.

One of our most interesting general findings, particularly in terms of its implications for the accreditation process, is that there was little difference between responding ALA-accredited library schools and responding non-accredited schools, from the perspective of the education and training offered by these schools in online searching. This suggests to us that the 18 non-accredited schools responding to our survey have made a commitment to the utilization of computer technologies in the provision of library and information services, surely an important step in achieving future ALA-accreditation. We look for a number of these schools to begin the self-study process leading to possible accreditation during the next few years.

Following the pattern of the survey instrument and the RESULTS section of this report the remainder of this discussion will be concerned with use of online systems designed primarily for reference purposes.

All but one of the schools that provide some form of instruction in online searching have at least one course in which ony the consciousness raising level of instruction is given. In all the schools, 31 different types of courses were named as having a consciousness raising component, but the most frequently mentioned by far were "Introductory Information Science" (57 percent of the schools which have consciousness raising), "Basic Reference"

(34 percent), and "Advanced Reference" (31 percent). In many schools, these introductions covered more than just the expected topics of the systems and databases available and the potential for online searching in reference work. Ninety-one percent included search strategy and online examples, while in 70 percent the students spent some time at the terminal actually searching. Nearly all of these courses used publicly accessible systems for at least part of the instruction; however, a full one-third of the schools also used in-house systems. The variety of courses in which both consciousness raising instruction and more specialized online components are found is at least in part a reflection of the interest and expertise of individual faculty members. Written responses to several of the survey questions tended to bear out our impression that there is still considerable faculty resistance to, or at least lack of knowledge concerning, the use of computers in libraries. We believe that continuing education can play an important role here to bring about the time when the rationale for placing consciousness raising or advanced instruction in particular courses is a pedagogical question rather than one depending upon the personal characteristics of individual faculty members.

Of the responding schools that include online searching as part of their regular curriculum, 59 (87 percent) offer courses beyond the consciousness raising level. All but four of the accredited schools responding are included in these numbers. Thirty-three of the schools have more than one such course and 11 have five or more. Twenty-eight (47 percent) of the schools have a course devoted almost entirely to online topics. The next most popular locations for substantive instruction are in information storage and retrieval systems courses (25 percent) and science/technology literature courses (also 25 percent).

The present study was not conducted primarily to evaluate the current status of instruction in online searching with respect to the Proposed Standards for Education in Online Searching in the Professional Librarianship Curriculum proposed at the University of Washington Institute (MIGNON, 1978). However, a number of observations regarding our findings and the proposed standards are worth noting.

The proposed standards expressed the view that all library science students should be exposed to consciousness raising instruction in online searching. Our results showed that this is very nearly the case today; only five of the 72 responding schools fail to provide such instruction. The survey did not attempt to discover the extent to which such instruction is required in schools; however, course titles suggest that this is very often the case. Major concepts to be introduced in a consciousness raising program were identified in the proposed standards as: computerized bibliographic records, machine databases, elementary Boolean logic, searching strategy, and user interviewing. We found that consciousness raising instruction in most schools today does include these topics, among others. The proposed standards recommended one hour of hands-on practice experience in a consciousness raising program. The results of the survey suggest that only about 2/3 of the schools offering consciousness raising instruction provide any hands-on

practice, and that the median time provided was only .65 hours. This is not enough time for students to become comfortable with the idea of communication via computer terminals.

Qualifications identified in the proposed standards for "operator training" were, in general, expressed in a greater level of detail than we were able to accurately assess in the questionnaire. However, responses to the survey suggest that the following qualifications are not being widely addressed in schools, at least not explicitly:

(1) General principles of literature searching independent of specific systems, databases, or technologies;

(2) The ability to identify the kinds of information needs for which online procedures are an appropriate form of response;

(3) The ability to execute a satisfactory search for one end user.

The proposed standards also called for at least five hours of hands-on practice per student for operator training. Many schools are now including nearly this amount of search time or more -- we found the median number of hours provided to be 4 -- but a significant number fall well below 5 hours. A total of 21 advanced courses in online searching provided 3 or fewer hours of hands-on practice per student.

While the proposed standards did suggest qualifications for faculty teaching online searching, this issue was not addressed in the present study. Standards proposed for instructional resources included at least one hardcopy terminal for the exclusive use of the library school, adequate documentation supporting the search services and databases utilized in the program, and access to audiovisual equipment such as character generators and television monitors to enhance the instructional process. The adequacy of documentation was not addressed in the survey, but our findings indicated that the median number of terminals in schools is 3, and that about half of the responding schools utilize monitors. The proposed standards also called for a staffed online systems laboratory. We found that only about half of the schools provide such a facility.

In summary, a comparison of our findings with the proposed standards suggest that while many schools meet and exceed the standards in virtually every category, a number of schools do not. In examining the questionnaire returns as a whole, it is possible to identify three educational patterns that have emerged in the past few years. One must keep in mind that there are variations in these patterns, and some schools fall between the cracks. It is illuminating to examine different approaches. The first pattern, which is the most prevalent one, shall be called the "Single Online Course." It is found in schools such as Kentucky, South Florida, Illinois, and Columbia. There is only one course devoted entirely to online searching. Basic reference is usually a prerequisite and there may be an information science prerequisite as

well. Publicly-accessible systems, most likely Lockheed, are used for practice. The students begin practical experience on one database, probably ERIC, and then expand to other databases. There is considerable emphasis in the course on file structure, indexing languages, evaluation, the pre-search interview, administrative aspects of searching, search strategy, and the mechanics of searching. The course is taught by a full-time faculty member. We know that the objective of at least some of the courses is to educate and train novice searchers. In the rest of the curriculum, online instruction is limited to a small component in basic reference and perhaps a few other courses (e.g. sci-tech bibliography or information storage and retrieval).

The second pattern, typified by the University of Denver and the University of Mississippi, is dubbed "Large Component." Here online searching is a major part (40 to 60 percent) of another course. Usually the other course is from the information science side of the curriculum (e.g., information storage and retrieval), but it can also be an advanced reference course (Toronto). If the course is primarily concerned with information systems, there is more chance that an in-house system will be used than in courses devoted entirely to online searching. A few schools offer a course of this type as well as a course devoted entirely to online searching; other schools have a "Large Component" information science course in parallel with the "Integrated Approach" described below.

By the "Integrated Approach," we mean full integration of substantial online instruction into all the general reference and subject bibliography courses. Fully integrated schools might not have any courses primarily devoted to online searching. There are only a few schools (e.g., U. of Texas, Rosary, U. of Michigan before a recent change) following an integrated approach. What is interesting about this pattern is that it is where the majority of educators seem to feel that online is headed. Moreover, it is the direction in which many feel very strongly that we should be going. There is a great deal of support for the point of view that online searching is just another reference technique and that this is the context in which it should be taught.

Why, one might ask, such a large difference between what is being done in the schools (teaching of courses devoted entirely to online searching and "Large Component" courses) and what the majority of educators believe to be ideal (integration)? First, there is a substantial minority who believe in integration, but also believe that there should be a single course devoted entirely to online searching. The issues and techniques are sufficiently complex, these educators say, that they cannot be taught properly within the context of another course. There are sound pedagogical reasons for this position as well. Without a single course in online searching, there is no way to integrate the concepts into reference courses without a great deal of repetition in the instruction provided in each course (operation of equipment, database and record structures, system commands, etc.). One solution to this repetitive instruction is to have a separate course as a prerequisite or concurrent requirement to the advanced subject bibliography courses in which integration has been achieved. This raises the question of prerequisites,

already a difficult problem in a one-year library education program. We found that most schools offering a separate course in online searching rquire one or more prerequisites for that course. The typical one-year library education program simply cannot handle prerequisites for prerequisites of courses; the sequencing problems are difficult or impossible to solve. This type of sequencing only becomes feasible in a two-year curriculum.

Another major barrier to integration, with or without a course devoted to online searching, appears to be cost. Seventy-five percent of the respondents mentioned cost as a barrier to further development of instruction in online searching in their schools. It seems likely that spreading online practice out among five or six courses, rather than concentrating it in one, would be even more costly, especially in terms of practice time. Integrating bibliography courses while leaving an online course intact would, of course, add to the expense. Unfortunately, using an emulator is no solution to the cost problem, because keeping the emulator up-to-date is expensive. One school employs a full-time programmer for this purpose!

The other major barrier to integration, obtaining adequately trained faculty, is itself partly related to cost. In some schools, there are no adequately trained faculty, because faculty teaching subject bibliography and reference courses resist online training. Either these faculty members do not want to be bothered with routine training for practical reasons or they truly feel that it is not appropriate. In other situations the problem is simply that the funds and opportunity for training these faculty simply do not exist. While it is not an objective of the study to make recommendations, it has become obvious to us that the means should be found to aid this large group of persons in schools of library and information science who teach reference and subject bibliography, but do not have online training, to integrate concepts of online searching into their courses. This can be accomplished in two ways: (1) by providing continuing education training opportunities; and (2) by creating teaching aids ready-made for use. A less desirable means of accomplishing integration is having online modules taught in these courses by faculty who already possess the online skills.

In some schools, online education has become a focal point for arguments on the theoretical versus practical approach to education for librarianship. The results of this survey show the theoreticians to be losing. Online courses are being added to more and more of the curricula; pressure from students who feel that online skills will help them in the job market is almost certainly a factor that is contributing to this increase. Ultimately, what happens in each school will result from a resolution of many considerations: the overall goals and orientation of the school, needs of the marketplace, scheduling practicalities, the interest and abilities of the available faculty, monetary considerations, and factors relating to the development of online searching technology.

VII. APPENDICES

A. Questionnaire and Cover Letter

UNIVERSITY OF KENTUCKY
LEXINGTON, KENTUCKY 40506

COLLEGE OF LIBRARY SCIENCE

AREA CODE: 606
TELEPHONE: 258-8876

April 21, 1980

Dear Dean, Director, or Chairperson:

As interest in online searching has increased over the past decade, so has concern for the problems of education and training of online searchers. One result of this concern has been the formation of the User Group of Online Educators within the Special Interest Group on Education (SIG/ED) of the American Society for Information Science.

Last year the User Group constituted a Curriculum Committee to develop ideas on how education and training for online searching could be improved with focus on three questions:

- What are the competencies needed by online searchers at various levels of expertise?
- What are the learning/teaching methods required to develop these competencies?
- How can education and training opportunities provided by academic institutions (through degree-granting programs and through continuing education), by database producers, by vendors of online services, by user groups, and by individual libraries and information centers be dovetailed into an integrated system?

In order to carry out its mission the Committee needs more information about current educational activities. Thus, it was decided to conduct this survey of curricular offerings in schools of library and information science. The survey is intended to update and extend Dr. Harter's earlier survey ("An Assessment of Instruction Provided by Library Schools in On-Line Searching," INFORMATION PROCESSING AND MANAGEMENT 15 [1979]: 71-75). Once we have obtained a broad overview we hope to study in more detail promising approaches so that they can be better publicized.

We would appreciate your passing this letter, questionnaire and return envelope along to the member or members of your faculty most involved in online searching to fill out and return. We would like to have a response by May 12, if possible.

Both for purposes of our survey and for the joint effort of AALS, SIG/ED, ERIC/IR, and CLENE to set up a system for sharing instructional materials, we would like to obtain as many syllabi and locally developed instructional materials as possible. We urge you to encourage your faculty to include such materials with the return of the questionnaire.

We intend to disseminate the results of the survey to the library education community. A response from your school will help ensure completeness in the data gathered and will enhance the potential usefulness of the study. Thank you very much for the time and effort you and your faculty expend on it.

Sincerely,

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Report Number: OCLC/DD/RR-81/3
Date: 1981 October 23

Return to: Dr. Stephen P. Harter
Library, Media, and
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SURVEY OF ONLINE SEARCHING INSTRUCTION
IN SCHOOLS OF LIBRARY AND INFORMATION SCIENCE

1. To what extent does your school teach the use of systems, such as OCLC and RLIN, for reference service (even though they were designed primarily for technical processing)?

   a. ___ Not at all

   b. ___ Mentioned only

   c. ___ Is a topic in one or more courses

   If (c) was checked, please describe briefly.

   _____

   _____

   _____

For the remainder of this survey, online searching is defined to include traditional online bibliographic searching through systems such as Lockheed, SDC and BRS as well as use of numeric databases, the Source and teletext systems. Systems designed primarily for technical processing are not included.

2. Are you currently providing instruction in online searching as part of your regular library school curriculum?

   ___ Yes (go to #3) ___ No (go to #11)

3. Introductory instruction which gives students awareness of the procedures and uses of online searching has been called "consciousness raising." Does your school have courses in which only the "consciousness raising" level of instruction is provided?

   a. ___ Yes (go to #3.b) ___ No (go to #4)

Online Survey - 2

b. In what courses does it take place? (Please enter course numbers.)

_____ Basic Reference

_____ Introductory Information Science

_____ Advanced Reference

_____ Other (specify) _____

_____

c. Which of the following topics are introduced in these courses? (Check all that apply.)

___ Structure of the online industry

___ Databases available

___ Nature of machine-readable records

___ Examples of simple online searches

___ User-system interaction in an online setting

___ Conceptual aspects of search strategy and search formulation

___ Potential of online searching in reference service

___ Functions of the online reference librarian

___ Reference interview in an online setting

___ Non-bibliographic databases

___ Other (specify) _____

_____

_____

d. Does your consciousness-raising instruction include online, hands-on practice?

___ Yes (go to #3.e) ___ No (go to #4)

e. How much time per student? _____ minutes / hours (circle one)

Online Survey - 3

f. If your consciousness-raising instruction includes online practice, which of the following types of systems are used? If more than one system is used, rank your choices by 1 = most used; 5 = least used.

___ Publicly accessible system (e.g. DIALOG)

___ Online emulator of a publicly accessible system (e.g. U. of Pittsburgh's TRAINER)

___ Computer-assisted instruction

___ In-house system

___ Other (specify) _____

_____

4. List the courses in which education in online searching beyond the consciousness-raising level is offered.

Course No.	Title	% time devoted to online searching topics
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

Please answer question 5 for each course in which 50% or more of the time is devoted to online searching topics. If there is no such course, go to question 6. Complete one set of answers for each course taught. One extra blank question 5 is enclosed. If more than two courses qualify, please photocopy question 5 as many times as needed.

Online Survey - 4

5. Course in which 50% or more time is devoted to online searching.

a. _____ Number _____ Title

b. Are there any prerequisites?

___ Reference course(s)

___ Information storage and retrieval, information systems, or information science

___ Other (specify) _____

_____

c. Topics covered: (Check all that apply)

___ Nature and types of machine-readable databases

___ Databases available

___ Characteristics of nonbibliographic databases

___ File and record structure of databases

___ Structure of the online industry

___ Database producers

___ Database vendors

___ Management of an online search service

___ Service organization, procedures, and staffing

___ Database evaluation and selection

___ Vendor evaluation and selection

___ Costs and charging policies

___ Equipment and other start-up considerations

___ User education and service promotion

___ Document delivery systems

___ Evaluation

Online Survey - 5

___ User/librarian and user/system interaction

___ Reference interview in a computer-based setting

___ Searching

___ Use of equipment

___ Conceptual aspects of search strategy and search formulation

___ Search mechanics, system commands

___ Other (please specify): _____

_____

_____

d. Do students receive "hands-on" practice time?

___ Yes (go to #5.e) ___ No (go to #5.i)

e. How do students work at the terminals?

___ Alone ___ In groups of two

___ In groups of three ___ In groups of four

___ Other (Describe) _____

_____

_____

f. How many total hours of hands-on search time does each student receive?

_____ Hours

Online Survey - 6

g. Estimate the approximate percentage of use each of the following systems receives.

___ Lockheed

___ SDC

___ BRS

___ National Library of Medicine

___ New York Times Information Service

___ The Source

___ Online emulator (e.g. U. of Pittsburgh's TRAINER)

___ In-house system

___ Other (specify) _____

_____

_____

h. List your most used databases and estimate the approximate percentage of total use each receives.

Database	% of Use
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

i. What textbooks or online instruction manuals are used in the course?

_____

_____

_____

j. What is the instructor's status?

___ Full-time faculty member ___ Adjunct faculty member

Online Survey - 7

6. Do you have a separate information systems laboratory or room in which online terminals can be used?

___ Yes (go to #7) ___ No (go to #9)

7. Is this room staffed with a person trained in online searching?

a. ___ Yes (go to #7.b) ___ No (go to #8)

b. How many hours per week is it staffed? ____ Hours

8. How many terminals do you have dedicated for student use?

_____ Terminals

9. Do you utilize video monitors for classroom demonstrations?

___ Yes ___ No

10. Please indicate with a percentage estimate how your library school finances the different costs of online searching instruction.

	(1) Initial Investment	(2) Connect Time for Computer & Communications	(3) Terminal Maintenance	(4) Other Costs
University support	_____	_____	_____	_____
Student Assessment	_____	_____	_____	_____
Sale of Reference Services	_____	_____	_____	_____
Grant Monies	_____	_____	_____	_____
Other (Please specify)				
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
	(Total = 100%)	(Total = 100%)	(Total = 100%)	(Total = 100%)

Online Survey - 8

11. Does your school sponsor short courses or workshops on online searching?

    a. ___ Yes (go to #11.b) ___ No (go to #12)

    b. Is credit available?

    ___ University credit

    ___ Continuing education credit

    ___ No credit

12. In a recent article Charles Bourne stated:

> In the long run, though, it is the library school that will be responsible for producing new librarians versed in computer-based search skills. First, we expect that courses in computer-based reference will enter the curricula of more library schools. Later, computer search techniques could be integrated into the regular reference courses. (1)

So you agree with this scenario? ___ Yes ___ No

Comment: _____

_____

_____

13. What do you feel are the significant barriers to the development of online searching instruction in library schools? (Check as many as apply.)

    ___ Cost

    ___ Obtaining adequately trained faculty

    ___ Faculty opinion that it does not belong

    ___ Other (specify) _____

    ___ There are no significant barriers.

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(1) Bourne, C. P. and J. Anderson. "Education and Training for Computer-Based Reference Services: Review of Training Efforts to Date." JASIS 31:1 (January 1980) 25-35.

Online Survey - 9

14. Other Comments: _____

_____

_____

_____

If you are willing to provide them, copies of any locally developed instructional materials, including syllabi, will be greatly appreciated. A copy of your school's catalog would also be appreciated. These materials will be used to provide course descriptions for the courses named in questions (3.b), (4), and (5), and to resolve possible ambiguities in answers you have provided.

Instructional materials provided can be forwarded to ERIC/IR for inclusion in the ERIC database.

___ Yes ___ No

Note: In reporting results we may wish to discuss practices in specific schools. If you do not wish your answers indentified check here (___) and your response will be reported as summary statistics only.

_____ Date

_____ School

Respondent (Person to contact for further information):

_____

(___) _____ Phone

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B. Responses to Open-Ended Questions

Response to Question 1.c: If teaching of systems, such as OCLC and RLIN, is a topic in one or more courses, please describe briefly.

- OCLC is taught as part of Advanced cataloging and Reference is taught in the course.

- Reference, cataloging and classification, Research Methods

- Reference course, cataloging course, information science courses.

- All students are given two LC proof slips for which MARC exists. They then learn each system's commands and search both RLIN and OCLC in inquiry mode. All "possible" access points are used in the assignment.

- MARC records through CAN/OLE discussed in general course. Used in On-line Searching course. Regular use of DIALOG, MEDLINE.

- Students in the introductory cataloging course are taught to search the database and the basic nature of the MARC format, RLIN searching is done in the advanced cataloging class and is used to answer basic reference questions.

- OCLC is taught in Introduction Course. Hands-on experience in Cataloging and specialized course named online cataloging.

- Incorporated into reference class.

- Is a topic in Technical Services.

- In the courses on cataloging and reference (omitting potentials and limitations)

- Bibliography; Social Sciences Info., Resources for biblio. variation; management and techniques of online searching tie-in with LIBCON/E in ORBIT; providing subject access to OCLC.

- Use of OCLC, MEDLINE are integrated in half of courses besides.

- In Library Automation (a required course) all students have hands-on practice in searching OCLC, including the serials and ILL subsystems as well as online cataloging.

- Advanced Cataloging course taught on the graduate level.

- Two courses address this topic: Intro. to Info. Sci and Analysis of Information systems.

- Use OCLC filmstrips
  Chapter from resource book on networks

Responses to open-ended questions have been left in their original, unedited form.

- Discussed in basic reference course.

- Included in Analysis and Automation of Library Operations course.

- Presently covered in an introductory data processing course - to be covered in greater depth in a class planned for Fall 1981.

- Database Reference Searching will be offered for the first time this summer. Info. Sci. & Tech., Systems Analysis, Indexing.

- Reference and Bibliography, Reference Sources in the Social Sciences, Library of Congress Classification System, Information Science

- Discussed in Introduction to Information Systems and Cataloging Theory and Practice.

- Research and American Library Resources, Advanced Reference and Bibliography, Advanced Reference Topics (6), Computer Applications to Librarianship

- Guest speaker in Basic Information Services; discussed with reference to bibliographic verification in online reference service.

- Discussion, demonstration, exercise in online searching course. Some mention in general reference course.

- Introd. and exercises in searching for graduate reference course and undergraduate bibliogr. course.

- Reference Sources and Services, Information Storage and Retrieval Systems. All advance reference courses/information sources courses

- In Reference Services and in Introduction to Automation and Libraries.

- DIALOG access considered in online information storage and retrieval course.

- Discussed in a required, introductory course; taught in-depth in optional elective courses.

- Automation of Bibliographic Control in Libraries, Principles of Computer Organization and Programming.
This course introduces problems of access to MARC records (Programs are written to search on experimental MARC file.)
Online Searching includes some searching of MARC records, and Experimental Searching of MARC records.

- The reference aspect is discussed in Storage and Retrieval II and in Computer Based Retrieval.

- Use of OCLC for verification is taught by lecture, demonstration and exercise in support of our statewide teletype information service.

- In OCLC module in Basic Cataloging use of OCLC functions are taught. ILL module used some. That OCLC has reference applications mentioned, but not practiced.

- Used extensively in cataloging courses but ref. use is only mentioned.

- Not explicitly for reference, but the functions needed for reference service are taught.

- Covered in basic required courses and several advanced courses.

- We need to do more here. Our instructors have no travel budget to go to Columbus. If the training could be brought here it would help.

- Network discussions distinguish use (and misuse) of systems for different purposes.

- Demonstrations of OCLC database, Interlibrary loan forms, etc. given and discussed as reference tool.

- An integral part of computer course and a unit of study in admin. and ref. courses.

- Searching on the OCLC terminal (search keep etc.) is covered in at least 3 courses, including the Basic Reference course.

- In cataloging courses, basic reference, bibliography courses, information science and library automation. Some dicussion on systems, uses, theory behind automation of services (Boolean logic, etc.)

- OCLC used for catalogue searching. RLIN used same way including subject searching. 30 minutes per student online.

Responses to Question 3.b.: Courses in which the consciousness raising level of instruction takes place, arranged by schools.

- Bibliography of the Social Sciences
  Government Publications

- Concepts of Abstracting and Indexing

- Service course - LS students take if needed: required in Engineering, Business, etc.

- On-line Library Systems

- Bibliographic Organization and Control

- Core course (required for all students)
  Science literature

- Information Sources in Science and Technology - a compulsory course

- A core course required for all MS students

- Networks

- Social Science Literature
  Govt. Pub.
  Academic Library Service
  Library Collection Development
  Special Lib.
  Media Services
  Medical Librarianship

- Computerized Information Retrieval

- Cataloging
  Acquisitions
  Doc. & Inf. Retr.

- Special courses in online searching

- Advanced courses in information storage and retrieval.

- Library automation

- Analysis of Information Systems

- Problems in Selection and Evaluation of Library Resources

- Information Storage and Retrieval Systems (graduate level)

- Computer-based reference services

- Science Lit.
  Humanities Lit.
  Special Libraries
  Technical Services

- Basic Cataloging and Classification
  Advanced Cataloging and Classification
  All students must complete two self-instructional units -
  one on OCLC and one on DIALOG.

- Computer Based Retrieval System

- Research Methods

- Research

- Scitech Literature Courses

- Humanities Literature
  Literature of Social Sciences

- Foundations for Information and library studies

- Organization of info. resources
  Intro. to Computer Technology

- Organization of Materials. This forms part of the school's core curriculum, a term-long course required of all students

- Computer Based Retrieval

- Information Storage and Retrieval
  Science Reference

- Introduction to Information Science

- Gov. Docs.
  Sci. Tech. literature

- The Block (12 hour required team-taught extravaganza)

- Literature courses

- Research methods (numeric data bases)

- Sources courses, e.g. humanities, social sciences, sci. and tec.

- Science literature for the specialist
  Health sciences literature

- Intro. to Bibliographic Control

- Introduction to bibliography

Responses to Question 3.c.: Other topics introduced in consciousness raising courses.

- Quality control of indexing for online database searching.

- General administrative considerations.

- Information Brokering
  Online research findings
  Online vs offline alternative

- LEADER Retrieval System usage

- Lab. sessions with specific topics searched:lab fee.

- Systems design and evaluation

- Evaluation of databases

- Used in teaching about recall and precision

- That online systems now provide a golden opportunity for librarians to move from their obsession with peripheral info. sources to primary and secondary sources as their main point of focus.

- Hands on experience.

Responses to Question 3.a.: In consciousness raising course, how much online, hands-on practice time is included per student?

- cost to student = $20/hour. There is no maximum limit but the minimum requirement is $25 (online lab fee).

- Demo only at the introductory level. Approx. 10-15 min. in advanced courses (other than the on-line course per se).

- We group students into fours. They work together on own assignments.

- In Basic Reference lack of time and funds preclude this.

- Available but not required. As much as desired.

- plus additional time as needed by individual students to complete reference assignments in various reference courses.

- 2 searches per student in one course; varies in oth

Responses to Question 4: Courses in which education in online searching beyond the consciousness raising level is offered.

Course	Percentage of Course Devoted to Online Searching
- Database Searching and Utilization	85
- Online Interactive Systems	100
- Information Storage and Retrieval	60
Literature of the Humanities	20
Literature of the Social Sciences	20
Literature of the Sciences	20
- Learning Resources	2+ hours
Reference Services and Resources	5+ hours
Information Resources	10+ hours
Research	Varies, but heavy
- On-line Library Systems	90
- Advanced Information Science	-
- Information Networks, Data Bank Systems	50
- Science & Technology Information Data Bases	30
Introduction to Health Sciences Librarianship	30
Health Sciences Communication Networks	50
Special Studies/Online Data Base Searching	100
- On-line Information Systems	50
- Computerized Data Bases	100
Advanced Reference	5
- Online Bibliographic Searching	100
Search Strategy	10
Resources in Science & Technology	5
Resources in Social Sciences	-
Resources in Humanities	-
- Introduction to Librarianship	1.5 hours
Cat. and Classification	1.5 hours
Auto. of Lib. Processes	2 hours
Advanced Cataloging and Classification	2 hours
On-line Cataloging	Complete Course

	Percentage of Course Devoted to Online Searching
- Introduction to Information Science	5
Networks	5
Basic Reference	5
- Information Retrieval	-
- Computerized Information Retrieval	
- Inf. & Inf. Res. in Humanities	20
Inf. & Inf. Res. in Soc. Sci.	20
Inf. & Inf. Res. in Sci. & Tech.	20
Studies in Doc. & Inf. Retrieval	20
Data Base Use	Over 50
- Bibliography	5
Soc. Sci. Info. Resources	5-10
Sci./Tech. Info. Resources	5-10
Computers in Libraries	15
Techniques and Management of On-line Searching	100
- On-line Search of Databases	100
Introduction to Inf. Science and Data Processing	50
- Information Retrieval in the Library	15
Seminar in Online Searching (This will have a regular course no. in the future and will have prerequisites listed. Currently it does not)	Over 50
- Computers and Language	5
Intro. to Info. Sci.	10
Info. Retrieval Theory	5
Intro. to Library Automation	15
Analysis of Inf. Systems	15
Subject Doc. Retrieval	10
ALP-Aided Doc. Retrieval	10
Retrieval Languages	10
- Online Systems and Services	90
Abstracting and Indexing	35
Health Science Librarianship	40
- Information Storage & Retrieval Systems	50
- Computer-based Retr. Services	100

	Percentage of Course Devoted to Online Searching
- Basic Information Course	3
Government Information Sources	6
Information Sources of Humanities	3
Information Sources of Social Sciences	3
Information Sources of Science and Technology	10
On-line Data Base Searching	100
On-line Retrieval and Services of Search Services	90
On-line Retrieval of Law Literature	90
- Data Base Reference	90
Seminar in Sci./Tech. Inf.	90
Inf. Sci. Tech.	50
- Reference Services in the Humanities	5
Reference Services in the Soc. Sciences	5-10
Reference Services in the Sciences	5
Advanced Reference	12
Information Science	50
Advanced Cataloging & Classification	24
LC Classification	10
- Computer Based Retrieval Systems	100
- Introductory Workshop to Online Literature Searching	100
- Research	-
- Humanities Lit.	10-15
Social Science Lit.	15-20
Science Literature	20-25
Government Publications	10
Online Reference Service	100
- Lit. of Science & Technology	5
Online Data Bases	60
Medical Librarianship	40
- Online Information Retrieval	100
Info. Sources and Services in Science	10
Info. Sources & Services in Soc. Sci.	10
Directed Studies in Online Retrieval	100
Government Publications	10
- Computer-based reference service	100
Introd. to Information Retrieval	50
- Information Storage and Retrieval Systems	60

	Percentage of Course Devoted to Online Searching
- Inf. Storage & Retrieval II	100
- Automation of Library Systems	5-10
Advanced Reference Work	10
Electronic Information Services	100
Topics in Library Automation	varies
Documentation	15
- Computer-based Ref. Services	100
- Online Information Services	100
- Computer Based Retrieval	40
- Online Information Systems	100
- Reference 1	5
Advanced Reference	-
- Computer-based Reference	100
- Basic Reference	5
Science Bibliography	5
Social Science Bibliography	5
Medical Bibliography	5
- Information Systems	75
- Abstracting and Indexing	50
Medical Subj. Analysis	50
Online Reference	100
Library Info. Systems	5
- Science Literature	about 50
Online DB Design and Evaluation	100
- Interactive Systems	100
Design of Interactive Systems	-
Interactive Systems I	-
Interactive Systems II	-
- Basic Reference	1 formal session
- Intro. to Info. Stor. & Ret.	15
Subject Diagnosis and Class, II	10
- Automated Information Sources and Services	100

	Percentage of Course Devoted to Online Searching
- Introductory cataloging	15
Advanced cataloging	10
Basic reference	5
Intro. to computing and systems analysis	25
Info. storage & retrieval	75
- Introduction to Information Processing	50
All advanced courses	varies with Individual students and instructors
- Reference Services	45
Science Literature for the Specialist	15
Health Sciences Literature	15
- Literature Searching	100
Science Ref.	30
Health Sciences Ref.	25
Nonbibliographic databases	40
Have also had one or two seminars each year on "advanced" online-related topics.	
- Information Sources and Services	2 out of 14 seminars
Advanced Information Services	4-8 out of 14
Special Topics	Sometimes all 14
Computer Files and Applications	A few seminars
- Trends in Library Automation	10
On-line Ref. & Info. Services	100
- Reference	5
Reference	5
Intro. to Libary Auto.	15
The School Media Center and the Computer	5
- Introd. to On-Line Searching	100
Lockheeds DIALOG	100
SDC's Orbit	100
Information Storage and Retrieval	5
Indexing, Abstracting and Automated Language Processing	5
Library Automation	4

Responses to Question 5.b.: Other prerequisite to courses in which 50% or more time is devoted to online searching topics.

- Fundamentals of Library and Information Science

- Foundations plus one of the Resource courses

- Fundamentals of L & IS

- Computer Applications in Libraries

- Introduction to Computers

- Literature course — either Humanities, Social Sciences or Science and Technology

- 12 cr. hrs./usually including reference

- Intro. to Automation

- Introduction to Librarianship and Information Management

- Several basic introductory courses

- Abstracting and Indexing
  Advanced Reference

- Computers in Library and Information Science

- Abstracting and indexing

- Block (12 hrs.), is a prerequisite for everything

- Collection Development and Use
  Organization of Library Materials
  Principles of Library Management

- Introduction to Library and Information studies (beginning "Fundamentals" course required of all students)

- We have two core courses that you have to survive in order to get into our good courses.

- None (I'm thinking of making a typing speed of 20 words per minute a prerequisite)

- Introduction to Bibliography

Responses to Question 5.c.: Other topics covered in courses in which 50% or more time is devoted to online searching topics.

- Network structure
  Thesauri structure

- Technical services aspects (RLIN)

- Index languages
  Query languages
  SDI
  Problems of judging retrieval effectiveness

- Publications monitoring new databases, changes, etc.

- Ethics
  Legality
  Copyright
  System Documentation
  Telecommunications options
  Protocols
  We treat the field as comprehensively as we can with a four quarter hour course.

- Local databases: needs, structure, programming use

- Implication of microcomputers for data-base searching.

- Search logic and strategies

- Failure analysis
  Database selection

- Basic programming
  Getting a job
  Develop inhouse db systems

- Directed study tailored to meet particular needs of students. Some study systems, particular databases, etc. Some study MEDLINE under direction of librarian of V.A. Hospital.

- Standards
  Experimental govt. standards/features

- Inf. System Design
  Programming an IR System in APL

- Telecommunications
  Intelligent Terminals

- Search evaluation in depth. See attached description of course.

- Current research in on-line information retrieval

- Searches assigned to each student in BIOSIS. Then after they perform the search, they give a presentation to the class on it usually using transparencies. Also online verification of garbled citations (BIOSIS). In groups of 2-3 students report on db (including 1-3 searches performed on their own to demonstrate class schemes, etc.). This summer INSPEC, COMPENDEX, ENVIROLINE, CA, GEOARCHIV.

- This course incorporates some of what might be included in the "traditional" information storage and retrieval course. Telecommunications (including protocols); subject access (relations between terms in thesauri)

- On-site visits to SDC headquarters in Santa Monica, and other information service centers in the Los Angeles area where online information sources are heavily used.

- Primary emphasis is on data base management systems-file organization, data, structures, models, security, evaluation, implementation, etc. Students use the local DBMS system to create, load, retrieve from, and evaluate individual databases of their choosing.

- Historical background and development; the future, i.e., changing concepts of reference and information service.

Responses to Question 5.e.: How do students work at the terminals? Other (describe)

- In groups of varying sizes.

- Depends on circumstances. Students are given a password. May search alone or in a group.

- With professor present - if requested by student.

- With lab assistant present. Classroom instruction. (TV monitor used for display) and lab combination.

- Sometimes they work together but they do not have to!

- Students learn to operate first. Theory and explanation come later.

- Students are free to (and do) form practice and study groups as they wish.

- Group sizes depend upon class size, usually 2-3 groups.

- demonstrating searches to class.

- ½ term in groups of two; ½ term alone

- Demonstrations, lab exercises in groups of 3-4; outside exercises alone.

- Some assignments are by teams.

- 2 students with 1 experienced search librarian

- With aid of instructor or assistant doing first ½ hour or so.

- Considerable blackboard simulation is also used

- Students work individually at terminals, but a full-time lab instructor is available in the room, in case problems or questions arise.

- With the help of a support staff member who checks search strategy beforehand.

- Some work done in groups to save computer time charges.

Responses to Question 5.f.: How many hours of hands-on search time does each student receive? Additional comments.

- One hour for paid systems, such as DIALOG or ORBIT, no limit on IRDIRS or OCLC.

- No hard and fast limit is enforced; this is average time (5.5 hours) per student for winter quarter 1980.

- No limits imposed.

- Four+ hours on Lockheed, SDC, BRS (+ more time as required on in-house system)

- As they work in pairs, they have the benefit of watching their lab partners online searching as well

- One hour at the library school. In the past we have been able to average internships outside the school in online searching situations. The internships offered through this particular course are optional for the course, and provide about 30 hours of online experience under the guidance of skilled searchers. During the current year these internships have not been available but we hope to offer them again in the near future.

- Five hours of search time. An additional 15 hours or so is devoted to data input (loader string creation and data definition); loading; and correction of errors.

- Haven't been able to get TRAINER to work on our system.

- Depends on efficiency of search strategy, which is monitored both before and after.

Responses to Question 12: Agreement or disagreement with Bourne statement and comment.

- "No." It is first integrated on a consciousness raising basis, then a separate course, then fuller integration is achieved. This is only a slight variation from Bourne's statement.

- "No." Cost factors make this approach prohibitive. Vendors will have to provide practical training. Schools can only provide background information.

- "No." With rapid development of online technology, I believe that specialized courses are needed to provide students with in-depth training.

- "Yes." Other faculty (2) are offloading some of my onlin. activity (RLIN, OCLC, DIALOG) into their cataloging and science reference courses.

- "No." I don't think integration would be satisfactory.

- "Yes." This pattern seems to be followed in our school.

- "No." Searching must be, and will be, integrated into far more types of courses than reference.

- "NR." Why single out reference as first?

- "Yes." Only the integrated approach makes sense.

- "Yes." It should happen in the short run if not immediately.

- "Yes." As I said earlier, this should be part of inf. practice; as in generations ago, cataloging was the main skill of the librarian. Information from the rapidly expanding pool of databases has become the main skill of the inf. librarian.

- "No." There is no reason to separate the two since computer-based indexing and computer-based searching are complementary on most existing systems.

- "Yes." Teaching reference sources will utilize microcomputers. I'm preparing for such now in reference for Fall term.

- "Yes." As a professional background for our school library media program.

- "No." First workshops and short courses, then computer search techniques should be integrated into the regular reference courses.

- "Yes." The sooner the better. Costs remain a problem even at the concessionary rate ($15/hr.).

- "Yes." We feel strongly that use of databases belongs in appropriate advanced reference courses by subject area.

- "Yes." I believe a brief computer search is a viable reference tool and should be used at the reference desk, and, so, included in a Reference course. But in-depth literature searching by computer is a complex procedure.

- "Yes." Incorporating now.

- "Yes." In our case the plan was to offer both data options-to provide mandatory instruction in required courses and a full elective course for the career-oriented searcher. I would like to see the course absorbed into an applied large S&R course.

- "Yes." The sooner online usage is thought of as just another tool the better. Online retrieval is in the spotlight now because it is new, but in a few years it naturally will diminish and it will be considered matter-of-factly.

- "Yes." Not sure how well it can be integrated into regular reference because of time limitations and instructor's knowledge. We integrate some but provide separate course for in-depth situations.

- "Yes." Difficulty of integration felt here where reference courses already "too full."

- "Yes." Problem to date has been lack of time and staff to give proper attention to this.

- "Yes." We have always worked toward this goal but a separate course seems necessary to explore special features and special data-bases.

- "Yes." This is exactly what is happening here, although we expect to continue to hold a course which specializes in online work in addition to the reference sources.

- "No." Most traditional reference instructors are not well-versed in automated systems; most traditional reference courses still have overemphasis on source materials/review and insufficient time for instruction in bibliography non-bibl. databases.

- "NR." I can speak only for this school. Computer-based reference was long ago part of the reference course - until it became clear that this full course was required. Both are now very full courses in terms of material covered, but they are partly coordinated in the reference problems studied."

- "Yes." This has been the sequence at our university and an effort to integrate techniques into the regular reference courses is desirable so that all students have some exposure to this area.

- "Yes." Library school is responsible but integration should take place from the beginning, and we have started such integration.

- "Yes." But the last step is many years off.

- "Yes." Integration is already established in this school.

- "Yes." We are moving very deliberately to integrate online searching in the curriculum by upgrading the existing curriculum rather than introducing new, separate courses.

- "No." Only consciousness raising can be done through integration. The production of qualified searchers requires not a course but a course sequence.

- "NR." We're trying to jump over the first part and implement the search techniques in subject-oriented reference courses right away, rather than isolate it.

- "No partly." We have started in basic reference.

- "Yes." But not if implication is that the courses in computer-based reference can or should disappear. I believe that both are necessary.

- "No." Our philosophy is that librarians are managers. Our newly-adopted curriculum strongly emphasizes management training. That must come first in a one-year curriculum. Searching skills, as with other technical skills, must take second priority.

- "No." For us it has been just the opposite. We have begun integrating its use into courses and are planning for a separate course.

- "Yes." Our present policy is expressed precisely by Bourne's last sentence. We feel strongly that database searching belongs in all reference courses (along with other reference tools) after students have been introduced to basic principles and techniques in our required "fundamentals" course.

- "Yes." We are about half-way there now.

- "NR." We have always attempted to integrate computer-based skills into the courses-not separate them out.

- "Yes." However, our course is presently taught in the math dept. and therefore not as strong as I would like for it to be in library applications. Trying to improve.

- "Yes." Consciousness-raising in basic reference will encourage students to take a full-blown course. Continuing education for working librarians is also essential.

- "Yes." We are working toward incorporating on-line instruction and student time on a terminal Currently the University library system provides assistance in instruction. Within 2-3 years we hope to have dedicated terminals.

Responses to Question 13: Other significant barriers to the development of online searching instruction in library schools.

- Developing adequate teaching modules

- Obtaining adequately trained faculty in subject-oriented courses (e.g. humanities, govt. pubs., etc.)

- Threatened by the nature of the equipment and databases

- Lack of appropriate equipment

- It will take time - however

- Some student resistance

- Need for multiple terminals for online searching

- Some searching is integrated within courses. We have little to send you.

- Crowded curriculum-little time

- Lack of faculty and student interest; Institutional red tape re: Commercial services

- Faculty fear and ignorance

- Need to teach management philosophies and skills within a one year program.

- Cost is very important. Do not underestimate! The big problem is finding adequate resources and opportunities to train the non-online faculty how to incorporate online resources in their courses. Again, you're got to bring the training to them (not the user) and you have to make it worthwhile to undergo the training.

- Finding appropriate places to integrate it into the curriculum. Also time. The curriculum is already crowded.

Responses to Question 14: Other comments

- We are integrating the techniques of computer based reference with the reference courses.

- I would like to have results as soon as possible. I think they will be very useful to all of us. Thanks.

- Techniques and management of online searching is a special topics course. The course has been approved as permanent by the school, but the university has a moratorium on new courses because of an upcoming calendar change. It is expected to become a regular offering.

- Librarians' basic value is his/her knowledge of clientele and the specialized inf./data bases in the field. This applies to public librarians, too. Librarians are not just catalogers or operators of the retrieval machines.

- We plan to introduce a course to our graduate students but this will not occur for at least a year.

- Online is one of our most popular and esprit courses.

- Library staff usually give video demonstration search on request, about once a semester. Use Library terminals; dept. budget pays charges. Tech. services presents OCLC at no cost to dept.

- Hope this helps in your survey.

- This Spring is the first quarter the class in online searching is being offered. Many of the responses made on this form will probably be changed as we evaluate this class, especially in regards to its cost and the manner of paying for it.

- We need a good text book and even less expensive agreements with vendors for online connect time.

- This past semester was the first time we have offered a course in online retrieval. I am hesitant to send you course outlines and classroom materials because I am now evaluating them to improve the course when I teach it next summer.
  If you want a syllabus after June 30, I will be happy to forward it.

- Our curriculum is in the process of change regarding online retrieval. We believe all students should receive minimum exposure in the Foundations course and Basic Reference; those wishing to specialize should take the separate course along with other I.S. courses. The advanced reference courses should allow in-depth study of particular databases in the sciences, social sciences. We also provide much independent study in searching.

- We have developed a DIALOG simulator (10,000 ERIC docs) that is used over 5 hrs./student during 1st 2 weeks of course; requires unique exercises, etc., mostly based on Bourne's workbook and Atherton and Markey.

- We have each student select a data base and do an in-depth report and demonstration of a substantive search. Hence we cover dozens of databases.

- The online course has recently been approved and will be taught each Spring starting in 1981. Until we know how many students enroll we cannot answer some of your specific questions. Sorry.

- Enclosed are: 1980 catalog, syllabus, Resources list, Reading assignments, term project description - if any other materials (assignments, lab exercises) are of interest, let me know, I have taught this course in the Spring semester for 3 years - 1978, 1979, 1980. This year was the first in which I was assisted.

- As mentioned in #12, we are integrating online searching in a manner designed to be as controlled and deliberate as possible. The aim is, I believe, to view online searching as simply another tool or technique with which the future librarian needs to be familiar.

- Our sequence begins with a required course in Programming and terminal operation, moves to A & I for languages, interviews, search strategies and evaluation, and completes with on-line ref. or med sub analysis.

- At the present time we are developing a 2-3 hour course that will be entirely devoted to online ref. searching. It should be offered in Spring, 1981.

- A course dedicated to online searching is necessary to provide sufficient practice—at a minimal level of competency. I don't see how this can be achieved in an advanced reference course.

- We are not opposed to librarians and others becoming skilled online searchers, but we simply say that for the present, most of these skills must be learned outside our curriculum. Eventually, if and when we get a 2-year program, the opportunity to learn searching skills much better may then become part of our elective curriculum.

- We need IIA to provide one "umbrella" service for library schools that would have a classroom instruction program for a little repository of the financial, numeric and non-bibliographic databases. It is tedious to negotiate with them separately, and most of them (e.g. Dunn and Bradstreet) can't understand anything about library education anyway.

- We train school library media specialists only and firmly believe that computer literature searching is essential for them.

- We are a small program, seeking to find a solution for offering a good online course relating to library science. The success is moderate-to-inadequate.

- Cost remains the chief inhibiting factor to further development of online searching in our curriculum. However, we do not want students to perceive that online searching accounts for a majority of the reference work done in libraries - some curricula seem to imply this to be the case.

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C. Case Studies

School A

This school has been philosophically committed to not having a division between library science and information science. Originally, its approach was to teach online searching as a part of the basic reference and subject bibliography courses. Since only a small part of these courses (5 percent) was devoted to online principles and practices, only the consciousness raising level of instruction was provided.

This arrangement did not work out, so that now online searching instruction is given in one credit hour mini-courses. These courses feature cross database searching on the Lockheed and SDC systems.

The interviewee is not satisfied with this arrangement either, especially since there are no prerequisites for the mini-courses. He would like to see an information storage and retrieval course as a prerequisite. With this foundation, he feels the students would derive much benefit from a course where they searched intensively using both Boolean and weighted strategies.

At this school the students take three core courses: reference, cataloging and selection. The interviewee believes that a basic course in information systems and database design is a more needed background to an online course than basic reference. A separate course devoted to online searching is definitely needed. It would be desirable to have this course as a prerequisite to the subject bibliography courses, but this presents serious sequencing problems. Also, there is some faculty resistance to having online searching included in the bibliography courses. The reality is that this is a new skill that some faculty do not want to learn.

SPIRES is taught at this school in a database management course.

Students want online training. The mini-courses are very popular. The labs are limited to 15 students.

This school is unusual in that there are no practical problems related to funding. They have a well-equipped facility with ten to twelve terminals and adequate support for online practice time.

School B

This interviewee teaches a course devoted entirely to online information systems. A prerequisite is a basic information retrieval course, which she thinks is appropriate because then the online course can be more advanced. Two classes of 25 students each are taught in a year. The class includes a term paper covering a topic related to online searching.

The school has a terminal room and good equipment, including a 1200 baud printer. The students search in pairs and in all have about three hours of hands-on practice each. Only one system is used and the interviewee feels this is adequate. ERIC is the most-used database. There is no lab fee—it would not be allowed by the university. For financial reasons the amount of practice time is restricted.

The course objectives are stated in the course outline: a) to explore the state-of-the-art in online information systems, with particular emphasis on their use as part of reference service in libraries; b) to acquaint students with the characteristics of both bibliographic and numeric databases; and c) to train students in the use of at least one currently available online retrieval system.

According to the interviewee, the students will require more practice time when they begin working. The course covers the reference interview and concentrates on principles since they are felt to be of more long-term value than practical training. The next logical step for someone wanting to become a practicing searcher would be a vendor workshop. There is unlikely to be another advanced online course in the school;

cost is one factor but the interviewee feels that what they are now doing is reasonable and satisfactory, except that she would like to include more on numeric databases.

The interviewee also teaches science reference and has introduced an online component into that course. While until now online instruction has not been a part of the humanities and social sciences bibliography courses, the school has a new faculty member teaching them who would like to include an online component.

Some of the faculty are now developing a proposal for a basic reference course which would include some instruction in online searching. The reference unit would be taken out of the core course and expanded into a one-unit basic reference course, something the school has not had since separated core courses were abandoned for an integrated core some years previously. She hopes that most students will get sufficient experience in the basic reference and bibliography courses, so that the online course will become a more specialized course of primary interest to those students specializing in information science.

The online course is popular with the students. Another instructor taught an online information retrieval course for some years, but the students did not have "hands-on" experience in this course. Lab exercises became a part of the course when the present instructor first taught it in 1978. Prior to that time it was considered an advanced information science course; with the demand for online search skills it has become more of a service course.

School C

School C is noted for its strong information science curriculum. Even so, the place and methods for teaching online principles and practice are still being worked out, partly because the school just introduced an information management masters degree program that likely will have an impact on the overall curriculum.

They have built their own DIALOG emulator that runs on a database of 10,000 ERIC documents. A BRS emulator is in the testing stages and will be available for class use soon. Students use the emulator for three hours in the basic reference class; online searching is also taught in the other reference classes.

The university library has an online catalog that is utilized in the reference and cataloging classes. Use of this catalog for reference is a topic in the reference course and undergraduate bibliography course.

The course, devoted entirely to online searching, is an advanced course with twelve hours of prerequisites. The interviewee prefers the student to have basic reference first.

The course aims to give the student an understanding of database structure, interviewing techniques and management issues such as publicity, budgeting, and training. Because of the emulator the amount of online practice time allowed is unlimited. The students tend to utilize 15 or more hours. There is a laboratory staffed with a student assistant 20 or more hours per week. The students pay a lab fee of $30. Consideration is being given to marketing the emulator which is complete with a relevance feedback feature and a thesaurus.

The online course is very popular with students. They feel it will help them obtain employment. It is limited to 25, about 20 percent of whom are non-matriculated students. There is now a 1 credit course in online search skills which attracts many more non-matriculated professionals who want an introduction to online searching but don't require a 3 credit advanced course.

Numeric databases have been taught in a two-week workshop which will become a full semester course.

The interviewee does not think that all online instruction will ever take place in library schools. After all, Lockheed now trains 800 persons per month.

It is very important, the interviewee feels, that research on online searching be done in library schools. Faculty in this school are engaged in such research and are also supervising student research in this area.

The interviewee also believes it to be important for the schools to participate in the development of online instructional materials.

School D

School D has a two-year curriculum leading to a master of library science. There are six required courses including information resources, library administration and computer programming.

The consciousness raising level of online instruction is given in the required resources courses. There are presentations, some discussion, demonstrations, and a little hands-on practice (about 20 minutes). The interviewee would like to see the demonstrations expanded.

Online searching took about 45 percent of the time in a second-year advanced course called Reference Services. The objective of the module was to "develop an understanding of the impact of the on-line data-base on: the function of reference; the training of reference department staff; the notion of free service to the library's public; the availability of information in greater quantity to a greater number of people over a wider geographic area." Training students to become beginning searchers was not an objective. Readings and papers made up a large part of the coursework, in addition to exercises and up to three hours of hands-on practice.

Most of the "hands-on" work was done on the Lockheed system using the ERIC database. Modified sections of the Bourne workbook were used. There is a terminal room with 17 terminals but only four can be used to access public databases. Staffing is arranged when needed. The physical facility is good and there have been few budgetary problems until now. With overall library school budget cuts, next year may be more difficult. The dean is very supportive of online instruction. Last time around the

course had 23 students; it is limited to 25. Although the course is not required it is very popular.

There was a change in the Fall of 1980 with the result that the online component of the course was reduced. Students still spent two hours at the terminal but the exercises were less structured. In the Spring of 1981 the course in which the online module was about 45 percent was taught again.

Online instruction is also given in the health sciences libraries course, law librarianship and the business and science literature courses. In the health sciences course a medical school librarian talks to the class and the students do one search individually. The online section of the business literature course consists of a lecture and an online demonstration by a faculty member.

The students in the science literature course have a four-hour lab with up to two hours of hands-on practice. There is also a demonstration of the CAN/OLE retrieval system. Students conceptualize a complete search and perform it. This enrollment in the science literature course is usually ten or fewer students, but in the spring of 1981 with the introduction of the practical online component, it was up to 19. In the course on legal literature and librarianship the QL system legal databases are demonstrated at the law library.

A course in documentation utilizes a small in-house database for practice. The interviewee would like to see a larger, better database built.

There is no online instruction in the social sciences or humanities literature courses. Numeric databases have been covered briefly in one course.

The interviewee feels that the online instruction given in the first year is about right. In addition, she would like to see online searching taught in all the subject literature courses but lack of faculty knowledge is a barrier to this right now.

If a separate online course is taught, then, the interviewee feels, the second year reference course should be a prerequisite. But she does not want a separate course at this stage. There would be financial problems if many courses devoted exclusively to online were given.

School E

This school also has a two-year curriculum. There is a core course, taught by the entire faculty, which includes consciousness raising and hands-on terminal experience. The course covers computer basics, but not information storage and retrieval. The students use the large campus computer to manipulate data online, with terminals located in the school.

During the second term almost all students take an automation course that covers bibliographic networks, the basic online systems (about one-third of the course), and uses the campus system to handle MARC tapes using SPIRES.

In "Documentation," a related year-long course, the students create a database using SPIRES and search it.

A course devoted entirely to online searching is taken in the Spring of the second year. The library automation course is a prerequisite. This course utilizes the Lockheed, SDC, CAN/CLE, and CL systems for practical experience and also covers numberic databases.

This school has a number of practical problems related to funding. While they have a laboratory room and student assistance, there are not enough terminals. In particular, they need a video monitor set-up for giving online demonstrations. Because of budgetary restrictions the course is limited to twenty; each student is limited to a searching budget of $50. The interviewee feels that the amount of practice time available per student is inadequate, and is hoping that the class size can be raised as more funds and terminals become available. A lab fee is not charged--and cannot be.

This school is located in an area where there are no industries and the special libraries are small. Many students do not see online skills as relevant to the public libraries in which they expect to work, very few of which offer online services. Those who hope to work in special libraries see online proficiency as an important skill that will help them find employment.

Online topics are not now taught in the subject bibliography courses. The interviewee feels that they should be, but the instructors now teaching these courses have chosen not to become involved in online searching themselves. He would like to see better integration of courses in the school, and expects that this will happen in the next few years.

School F

This school has seven core courses from which students must select five. Thus, it would be possible for students who do not elect the basic reference course to go through the entire curriculum without ever being exposed to online searching.

Intensive online searching instruction is given in two places in the curriculum: in a two-credit laboratory and a three-credit course, both devoted to entirely to online searching. The objectives of the laboratory are to teach the three basic systems, Lockheed, SDC and BRS. The lab course, which is taught by an adjunct faculty member with a great deal of online searching experience, meets two and a half hours per week. The first hour is a lecture on system features but also includes topics such as evaluation and comparison of systems and databases. During the laboratory period students work in groups first and then have individual exercises. Next semester this laboratory will be part of an information retrieval course.

In the online databases course the primary objective is to convey in-depth understanding of such topics as administration of online services, the online industry and future trends. The students are given three online assignments: 1) to perform a search for a real user; 2) to compare a manual with a computer search, and 3) to discuss in detail one database. Lockheed is mainly used, with the databases searched depending upon the questions received by the students. Aspiring beginning searchers need more practice than this and so an in-service training program has been set up with the help of the local online users' group. Students in this

program work one day a week in an online search service. They are then considered qualified to be practictioners.

The online databases course is popular. The laboratory section is limited to 12 students per section and there are two to three sections per semester, including the summer. The course is taken by many "outsiders," persons already in the library and information science field.

The school provided online training for all faculty members who were interested in learning, with the result that online searching is now included in the sci/tech bibliography and information retrieval courses but not in business or social sciences bibliography. The interviewee believes that there should be more integration but that the school should still have one or two courses devoted entirely to online. He suggested that the basic reference course might become essentially an online course. However, this is not likely to happen soon because many of the faculty feel that there is already too much information science in the curriculum.

The interviewee endorses the concept of a two-year curriculum. He feels that students should take basic information retrieval before the online searching course. Such sequencing would be possible in a two-year curriculum.

This interviewee is interested in the question of end user searching and the implications of this trend for library education. He also views the new microcomputer technology as having an important potential for training for online searching.

School G

This school is philosophically committed to integrating online concepts into existing reference courses as well as offering a separate course in online searching. Among the reasons offered by the school for having a separate course are:

1. instructors have varying degrees of skill and interest in online retrieval

2. it is difficult for instructors of other courses to keep up with developments

3. there is not enough time in existing courses to explore ramifications of online retrieval - evaluation, comparison of systems, relationship to indexing structures, costs, etc.

4. the introduction provided in existing courses is not sufficient for students to develop proficient searching skills.

The separate course is entitled "Online Information Retrieval." There are no prerequisites, but reference courses are recommended. The course concentrates on the BRS retrieval system, which the interviewee considers to be the best and cheapest system for beginners. The interviewee has written a manual to be used with the course. Relatively little time on DIALOG and ORBIT is also provided. In addition, the course provides dicussion, demonstration, and an exercise in the OCLC system from the perspective of reference service. The instructor reports that the course is one of the most popular courses that the school offers.

The school has integrated online concepts into several reference courses: Information Sources and Services in Science, Information Sources

and Services in Social Sciences, and Government Publications.

The school offers workshops in the managerial aspects of online searching, not available for university credit. The interviewee cited lack of time as a major factor prohibiting full integration of online searching into reference courses. The school believes that all students should receive minimal exposure to online searching, and provides such consciousness raising instruction in a foundations course and in a basic reference course. Much directed study in online searching is also provided, covering a variety of topics tailored to meet the particular needs of students.

The interviewee does not foresee a separate course in nonbibliographic databases in the near future.

School H

This school of library and information science is somewhat atypical in a number of ways: its large student body, its doctoral, undergraduate, and separate masters program in information science, its relatively early commitment to the utilization of computer technologies to information management and librarianship, and its outstanding physical facilities.

Several courses are available to the M.L.S. student that deal with online searching. Some consciousness raising instruction is provided in an introductory information science course, but this course does not offer hands-on experience. A separate course, "Interactive Systems," is specifically designed for Masters level students. The course has several prerequisites, including information science, collection development and use, organization of library materials, and principles of library management. It treats the nature and types of machine-readable databases, the structure of the online industry, management of an online search service, the reference interview in a computer-based setting, as well as principles and techniques of online searching. Students work alone at terminals, receiving 28 hours of hands-on search time on emulators of DIALOG, ORBIT, and BRS, providing access to more than 60 databases (but only six databases during a given term). Search manuals have been prepared by the School for the DIALOG and ORBIT systems, and are used as texts. The interviewee reported that the emulators of SDC and Lockheed are kept up to date, with changes made as they occur in the emulated systems. A few system features cannot be emulated, as they depend upon the full database, e.g., the related term feature and DIALINDEX in DIALOG.

The interviewee reported that there is not much demand by students to learn BRS, and that emulator is now somewhat out of date. The laboratory time takes place in a supervised environment, with three staff members present to oversee the progress of 15 students in each laboratory session. Additional laboratory hours are available if students wish to take advantage of them. The course also provides some search time on other systems, e.g., Lexis and MEDLINE. The Online Training Center is staffed with a full-time coordinator, three staff members, and a programmer. Eleven terminals are available for student use, and the school is in the process of obtaining several more. The interviewee reports that classes are always filled to capacity. Students believe that the course will give them an edge when seeking employment, an assumption that is probably correct, according to the interviewee. Students leave the course ready to begin as entry level searchers, with the best of them advancing very quickly.

Even though this school ranks among the top few schools of library and information science in the extent of its commitment to online searching, a number of barriers to further development of online searching in library schools were identified: cost, obtaining adequately trained faculty, and perhaps most surprisingly, faculty opinion that it does not belong. There are lectures and demonstrations of online searching in both the science and social science information sources courses. A practicing librarian is brought in for these sessions. DIALOG is demonstrated in the science reference course, and BRS in the social science reference course.

Nonbibliographic data bases are definitely a coming field, but it isn't clear how best to deal with them, the interviewee believes. While they are basically simpler than DIALOG and ORBIT, a background in statistics is required. The school needs to do more in this area.

School I

Currently in a state of transition, this school had at the time the survey forms were originally distributed, a well-developed program in information science, including a separate course devoted largely to online searching principles and practices and additional exposure to online topics in several other courses. This situation is now no longer true.

Formerly, in a separate course in information storage and retrieval, the characteristics of machine-readable databases were treated, as well as database producers and vendors, managment aspects of online search services, the question negotiation process in an online setting, and principles and techniques of searching. Four terminals were provided for student use in a laboratory staffed by a person trained in online searching. On-site visits to information service centers near the university were provided for in the course. Students worked alone at terminals, receiving approximately one hour of search time. Optional internships in online searching, under the guidance of skilled searchers, were also offered, providing about 30 additional hours of online experience. Online searching topics were also treated in a number of other courses offered by the school, including introductory and advanced cataloging, basic reference, and introduction to computing and systems analysis.

The school has recently revised its curriculum extensively, and the eventual place of online searching is currently in some doubt. The philosophy of the school is that librarians are managers and that

management training must come first in a one year curriculum. Searching and other similar technical skills must take second priority, and there is little remaining time in a one-year program after necessary managerial courses have been taught. In a longer program, sufficient time for teaching skills such as online searching may exist, and courses such as information storage and retrieval may again be taught.

Barriers to online instruction in library schools were identified as lack of time (need to teach management philosophies in a one year program), cost, and faculty opinion that it does not belong.

School J

This school has been long recognized as one of the most prestigious schools of library and information science. Consciousness raising instruction in online searching is provided in a basic reference course and in Introduction to Bibliography. The school also offers a separate course in online searching. The course has Introduction to Bibliography as prerequisite, and includes search time on both RLIN and OCLC, as well as approximately three hours of search time on DIALOG. Demonstrations and/or lectures on several other systems are also provided. Charles Bourne's DIALOG Lab Workbook is used for a text. Ten terminals are available for student use, in a laboratory staffed by a trained searcher for 20 hours per week.

The course appears to be unique in that it is divided into two parallel parts, taught by two different faculty members. In the first part, the DIALOG language and system are studied, as well as the reference interview in a computer-based setting and some management aspects of operating an online search center. The objective of this portion of the course is to achieve basic skills necessary to conduct an online search, including selection of databases, system commands, development of a successful search strategy, and the reference interview. The second part of the course, running concurrently with the first, treats conceptual and theoretical issues related to online searching, such as the effect of depth of indexing on retrieval results. The course is currently not graded (students receive grades of either satisfactory or non-satisfactory). Some exposure to nonbibliographic databases is also provided.

Cost was identified as the most significant barrier to the development of online searching in library schools. Reluctance of some to use electronic media was also cited as a major barrier.

The interviewee hopes and believes that online searching will one day be viewed as just another tool for the reference librarian, and reports that this kind of integration is currently well under way at this school. The faculty is currently reviewing the place of online searching in the curriculum, which up to this time has been a kind of "adopted stepchild."

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